179

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OF THE

AGRICULTURAL COLLEGE

OF

UTAH

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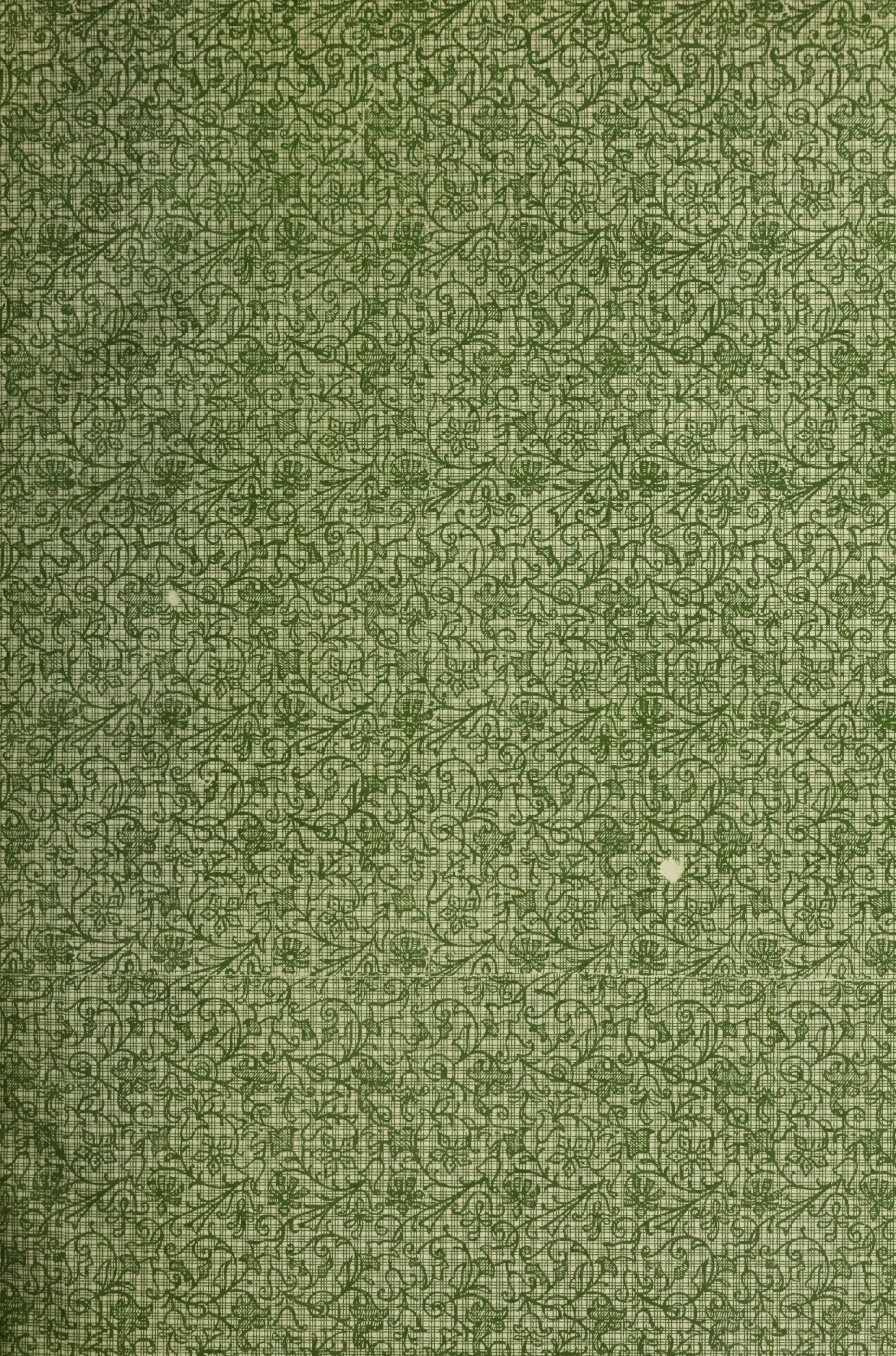

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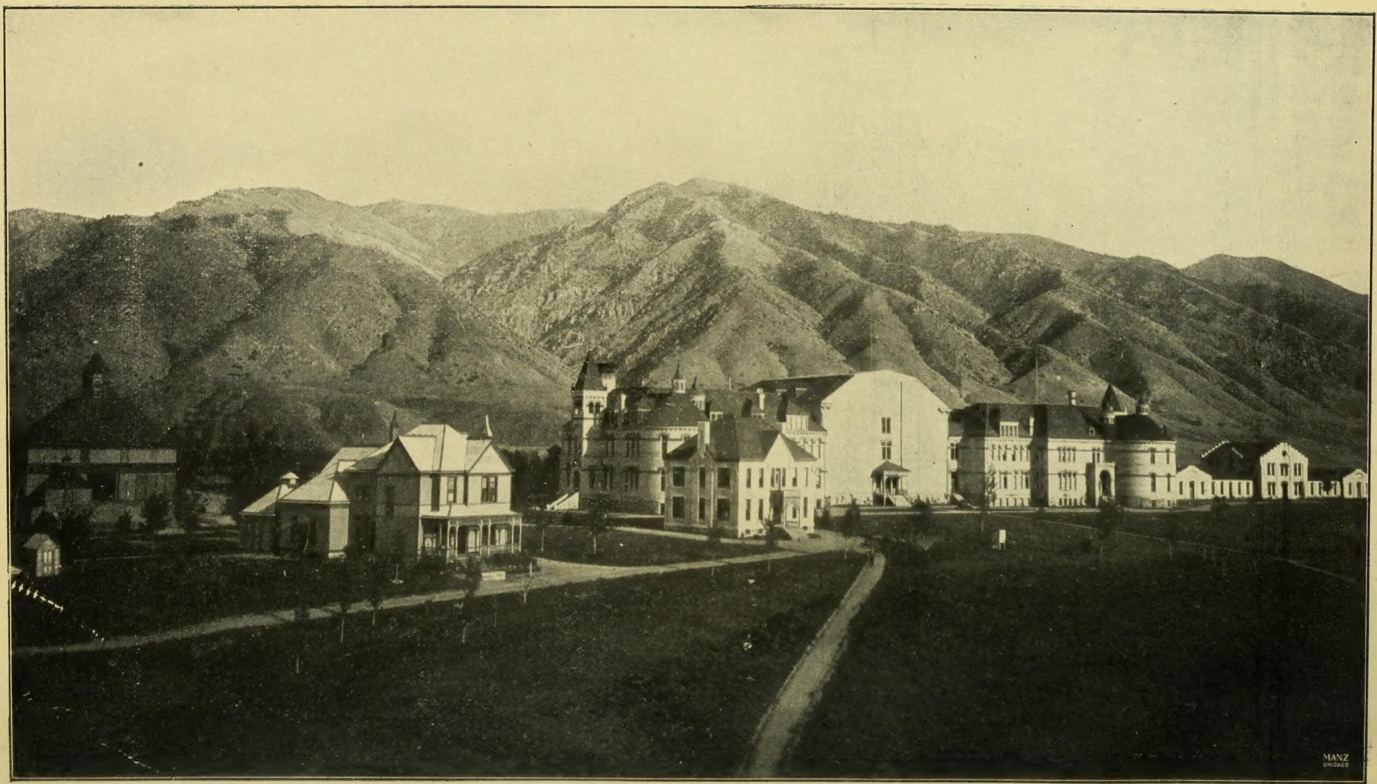
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THE AGRICULTURAL COLLEGE OF UTAH.

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CATALOGUE

OF THE

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OF

UTAH

FOR

1900-1901.

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With List of Students for 1899-1900.

LOGAN, UTAH.

Published by the College,
August, 1900.

TRIBUNE JOB PRINTING CO.,
SALT LAKE CITY . . . . . UTAH.

Calendar, 1900-1901.

1900.

JANUARY

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COLLEGE CALENDAR, 1900-1901.

FIRST TERM begins Tuesday, September 18, and ends Friday, December 21, 1900.

SECOND TERM begins Tuesday, January 8, and ends Thursday, April 4, 1901.

THIRD TERM begins Tuesday, April 9, and ends Tuesday, June 18, 1901.

Commencement Exercises occur from Sunday, June 16, to Tuesday, June 18, 1901.

HOLIDAYS.

Thanksgiving Day.

Christmas vacation, December 21, to January 8.

Washington's Birthday, February 22.

Arbor Day, April 15.

Decoration Day, May 30.

Summer vacation begins June 19, 1901.

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HON. WILLIAM S. McCORNICK	Salt Lake City
HON. EMILY S. RICHARDS	Salt Lake City
HON. D. C. ADAMS	Salt Lake City
HON. LORENZO HANSEN	Logan
HON. JOSEPH MORRELL	Logan
HON. ROSINA N. BAGLEY	Ogden
HON. JOHN A. McALLISTER	Logan

OFFICERS OF THE BOARD.

WILLIAM S. McCORNICK	President
PETER W. MAUGHAN	Secretary
ALLEN M. FLEMING	Treasurer

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WILLIAM S. McCORNICK, Chairman.
D. C. ADAMS. LORENZO HANSEN

EXPERIMENT STATION STAFF.

W. J. KERR	President of the College
JOHN A. WIDTSOE	Director and Chemist
F. B. LINFIELD	Dairyman
GEORGE L. SWENDSEN	Hydraulic Engineer
CHARLES P. CLOSE	Horticulturist
JAMES DRYDEN	Meteorologist and Poultry Manager
EPHRAIM G. GOWANS	Biologist
LEWIS A. MERRILL	Assistant Agriculturist
JOHN A. CROCKETT	Assistant Dairyman
JOHN STEWART	Assistant Chemist
ALLEN M. FLEMING	Treasurer
PETER W. MAUGHAN	Secretary

FACULTY AND INSTRUCTORS.

Arranged in groups in the order of seniority of appointment.

WILLIAM JASPER KERR, B. S., D. Sc.,

PRESIDENT.

Professor of Mathematics and Astronomy.

ELIAS J. MacEWAN, M. A.,

SECRETARY OF THE FACULTY.

Professor of English Language and Literature.

F. B. LINFIELD, B. S. A.,

Professor of Dairy and Animal Husbandry.

JOHN A. WIDTSOE, B. S., M. A., Ph. D.,

DIRECTOR OF EXPERIMENT STATION.

Professor of Chemistry and Mineralogy.

DALINDA COTEY, B. S.,

Professor of Domestic Arts.

JOSEPH JENSON,

DIRECTOR OF WORK SHOPS.

Professor of Mechanical Engineering.

JOHN W. FARIS,

PRINCIPAL OF COMMERCIAL DEPARTMENT.

Professor of Economics and Bookkeeping.

CHARLES P. CLOSE, M. S.,

Professor of Botany, Horticulture, and Entomology.

GEORGE L. SWENDSEN, B. S.,

Professor of Civil Engineering.

CLARENCE SNOW, B. S.,

Professor of Physics.

EPHRAIM GOWANS GOWANS, B. S., M. D.,

CURATOR OF THE MUSEUM.

Professor of Animal Biology.

JOHN FRANKLIN ENGLE, A. M., Ph. D.,

Professor of History and Civics.

Professor of Agriculture.

Professor of Military Science and Tactics.

JAMES DRYDEN,

Assistant Professor of Meteorology and Stenography.

WILLARD S. LANGTON, B. S.,

Assistant Professor of Mathematics and Astronomy.

LEWIS A. MERRILL, B. S.,

Assistant Professor of Agriculture and Veterinary Science.

EDWARD W. ROBINSON,

Assistant Professor of German.

JOHN T. CAINE, JR., B. S.,
PRINCIPAL OF PREPARATORY DEPARTMENT.
Instructor in English.

SARA GODWIN GOODWIN,
Librarian.

SARAH E. BOWEN,
Instructor in Sewing and Millinery.

RUTH EVELYN MOENCH,
Instructor in Elocution and Physical Culture.

JOHN STEWART, B. S.,
Assistant in Chemistry.

AUGUST J. HANSEN,
Foreman in Carpentry.

JULIEN P. GRIFFIN,
Foreman in Forging.

JOHN A. CROCKETT,
Assistant in Dairy Department.

WILLIAM PETERSON, B. S.,
Instructor in Mathematics.

PETER W. MAUGHAN,
Instructor in Penmanship.

SAMUEL B. MITTON,
Instructor in Vocal Music.

HERBERT W. HILL, B. L.,
Instructor in English.

RENA BAKER,
Instructor in English.

ELVIN JENSEN NORTON,
President's Private Secretary.

LYDIA HOLMGREN,
Assistant in Domestic Arts.

EDWARD PARLEY PULLEY,
Instructor in Mechanical Drawing.

General Information.

HISTORY.

An act of Congress, approved July 2, 1862, provided that public lands should be granted to the several states, to the amount of "thirty thousand acres for each senator and representative in Congress," for the establishment and maintenance of an agricultural college in each state. By the terms of a recent act providing for the admission of Utah as a state, the amount of public lands granted to the Agricultural College of Utah was increased to 200,000 acres. This land became available upon the admission of the Territory to Statehood.

The national law provides that from the sale of this land there shall be established a perpetual fund, "the interest of which shall be inviolably appropriated, by each state which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The act forbids the use of any portion of the aforesaid fund, or of the interest thereon, for the purchase, erection, or maintenance of any building or buildings.

The legislature of Utah, in 1888, accepted the provisions of the national law by the passage of an act which founded the College, defined its policy, prescribed its work, and indicated its sphere:—

"SEC. 10.—In the appointment of professors, instructors, and other officers and assistants of said College, and in prescribing the studies and exercises thereof, no partiality or preference shall be shown by the trustees to one sect or religious denomination over another; nor shall anything sectarian be taught therein; and persons engaged in the conducting, governing, managing or controlling said College and its studies and exercises in all its parts, shall faithfully and impartially carry out the provisions of this Act for the common good, irrespective of sects or parties, political or religious."

"SEC. 12.—The course of instruction shall embrace the English language and literature, mathematics, civil engineering, agricultural chemistry, animal and vegetable anatomy and physiology, the veterinary art, entomology, geology, and such other natural sciences as may be prescribed, technology, political, rural and household economy horticulture, moral philosophy, history, bookkeeping, and especially the application of science and the mechanical arts to practical agriculture in the field."

It is clear that the Agricultural College was founded in the interest of industrial pursuits and professions to give not alone a technical education, but in the language of the law, a "liberal and practical education." The legislative founders of this institution sought to place within reach of the producing classes, an education for which the older institutions had not, as a rule, made provision.

The policy of the College is in consonance with the letter and the spirit of the laws upon which it was founded. Its courses of instruction represent the great vocations of the people of Utah: agriculture, the mechanic arts, commerce, and home work.

"The act of 1862," says Senator Morrill, "proposed a broad education by colleges, not limited to a superficial and dwarfed training, such as might be had in an industrial school, not a mere manual training, such as might be supplied by a foreman of a workshop, or by a foreman of an experimental farm. If any would have only a school with equal scraps of labor and of instruction, or something other than a college, they would not obey the national law."

Under an act of Congress, approved March 2, 1887, the College receives $15,000 annually for the maintenance of its experimental work in agriculture. This is in charge of the department known as the Agricultural Experiment Station.

Under an act of Congress, approved August 30, 1890, the College received for its more complete endowment and maintenance "the sum of fifteen thousand dollars for the year ending June thirtieth, eighteen hundred and ninety." The act provides that this amount shall be increased by one thousand dollars each year until the annual appropriation reaches twenty-five thousand dollars. The amount received under this law for the present year is $25,000.

The legislature of 1888 gave $25,000 for buildings. The county of Cache and the city of Logan gave one hundred acres of land on which to locate the College. The legislature of 1890 appropriated $48,000 for apparatus, for the employment of teachers, and for the construction of a house, barn, two laborers' cottages and an experiment station building. The legislature of 1892 gave $108,000 for an addition to the College building, two houses, apparatus and salaries of teachers. The legislature of 1894 appropriated $15,000 for the purchase of apparatus, for a greenhouse, a veterinary laboratory and the employment of teachers. The legislature of 1896 appropriated $12,000 for the construction of workshops and general expenses for one year. The legislature of 1897 gave $41,000 for the erection of a laboratory, the extension of shops, the maintenance of a manual training school, and for the general expenses during two and a half years. The legislature of 1899 appropriated $40,905 for two years' maintenance and various improvements.

The value of the College property now in possession may be put at the conservative figure of $210,000.

The Constitution recently framed by the Territorial Convention for the new State of Utah provides:

"SEC. 4.—The location and establishment by existing laws of the University of Utah and the Agricultural College are hereby confirmed, and all the rights and immunities, franchises and endowments heretofore granted or conferred are hereby perpetuated unto said University and College, respectively."

OBJECTS.

The College is in several ways accomplishing the objects for which it has been endowed:

I. It gives a substantial education to men and women. Such general information and discipline of mind and character as help to make intelligent and useful citizens are offered in all its departments, while the students are kept in sympathy with the industrial occupations.

II. It teaches the sciences applied to the various industries of farm, shop and home. Chemistry, botany, entomology, biology and mechanics are made prominent means of educating to quick observation and accurate judgment. Careful study of the minerals, plants and animals themselves, illustrates and fixes the daily lessons. At the same time lessons in agriculture, horticulture, engineering and household economy show the application of science; and all are enforced by actual experiment.

III. It trains in the elements of the arts themselves, and imparts such skill as to make the hands ready instruments of thoughtful brains. The drill of the shops, gardens, farm, and household departments, is made a part of the general education for usefulness, and insures a means of living to all who make good use of it. At the same time it preserves habits of industry and manual exercise and cultivates a taste for rural and domestic pursuits.

IV. It strives to increase experimental knowledge of agriculture and horticulture. The provision for extensive and accurate research, made by establishing the Experiment Station as a distinct department of the College, offers assurance of more definite results than can be obtained by ordinary methods.

LOCATION.

THE COLLEGE is located on a broad hill overlooking the city one mile east of Main Street, Logan, and commands a view of the entire valley and of its surrounding mountain ranges. The beauty of the location is unsurpassed, and perhaps unequaled by that of any other college in the country. A few hundred yards to the south is the Logan River, with its clear water and luxuriant grasses and shrubs. A mile to the east is a magnificent mountain range and a picturesque canyon. In other directions the towns and farms covering the green surface of Cache Valley, and seen through the clear atmosphere, constitute a delightful and impressive panorama. The city is noted for its freedom from vice; it is quiet, orderly, clean and generally attractive, with neat homes, fine public buildings, electric lights and water system; the citizens are thrifty and progressive. The city has a population of about 6,000, and is the capital and commercial center of an agricultural county with more than three times that population, known as Cache Valley. The valley is a fertile, slightly uneven plain, 4,500 feet above sea level, about twelve by sixty miles in dimensions, almost entirely under cultivation, completely surrounded by the Wasatch Mountains, and one of the most beautiful and healthful valleys in the western region.

BUILDINGS AND GROUNDS.

The College buildings comprise the Main Building, the Experiment Station Building, the Mechanic Arts Building, the Dormitory, the Conservatory, the Veterinary Laboratory, the Model Barn, the Poultry Building, and residences for the President of the College, the Director of the

Experiment Station, and the Farm Superintendent, and cottages for farm laborers.

THE MAIN BUILDING is constructed of brick and stone. It is 360 feet long, nearly 200 feet deep in the central part, and four stories in height. It is heated by steam and lighted by electricity in every part. The rooms are light and pleasant and the halls spacious, extending on each floor the entire length of the building. This building contains the large auditorium, with a seating capacity of about 1500; a small auditorium, which will seat 400; the administrative offices; the library and reading rooms; the general museum; the gymnasium; the biological, the botanical, and the physical laboratories and lecture rooms; the office and class rooms of the commercial department; the sewing and millinery rooms, the laundry, kitchen, and dining rooms, and the offices of the department of domestic arts; the dairy rooms; the offices and class rooms of the department of civil engineering; and the class-rooms for English, mathematics, and modern languages.

THE EXPERIMENT STATION BUILDING is a brick structure, 45 feet long and 35 feet wide, two stories in height. It contains the laboratories of the Entomologist and the Horticulturist; the offices of the Director of the Station, the Agriculturist, the Horticulturist, and the Poultry manager; the library of the Professor of English; the mailing room; and a dark room for photographic work.

THE MECHANIC ARTS BUILDING, situated south of the Main Building, is 220 feet long by 40 feet wide, with the central part, 40 feet wide, extending back 120 feet. It is one story high, except the central front part, which is two stories. The walls are of brick and the roof of corrugated iron. The building is heated by steam, and is well lighted and ventilated throughout. It contains the Station and College chemical laboratories, the power room, the forge room, the carpentry, or bench room, the machine shops for wood and metal, and the office and class rooms of the director of manual training.

Adjoining the Mechanic Arts Building is a *store room*, 40 by 27 feet, two stories high.

THE DORMITORY is a brick and stone structure, 50 feet wide by 80 feet long, four stories in height. It contains thirty-three rooms for students, each 12 by 14 feet exclusive of closet; a reception room for students, 19 by 27 feet; a model kitchen; a dining room; a pantry, supplied with all modern conveniences; a laundry room; bath rooms; and rooms for the matron and for the employees. The rooms of this building are well lighted and ventilated, each room having two registers for ventilation.

THE CONSERVATORY is of the most modern type, 90 by 25 feet, and is filled with beautiful flowering and ornamental plants. There are three compartments of equal size, one for semi-tropical plants, such as ferns, palms, bananas, etc., one for roses, and one for carnations and other plants.

THE VETERINARY LABORATORY BUILDING, situated several hundred yards to the rear and east of the main College building, is a stone and frame structure, 18 feet wide and 42 feet long, two stories in height. It contains a dispensary, an operating room, stalls, etc. It is heated by steam.

THE FORCING HOUSE, adjoining the Veterinary Laboratory Building, is 16 feet wide by 25 feet long.

THE MODEL BARN is a wooden building, 60 feet square, and contains a silo, a root cellar, a motor room, and separate quarters for horses, cattle, and sheep; also model storage divisions for hay, grain, and seeds. Connected with the barn are buildings for swine and horticultural implements, etc. A ten-horse power electric motor furnishes power for grain threshing, feed grinding and fodder shredding.

THE POULTRY BUILDING is 125 feet long by 10 feet wide, built for experimental purposes. It contains twenty-four pens, with an outside yard attached to each.

The land occupied by the College and its several departments embraces about 105 acres. Of this, twenty acres constitute the CAMPUS, which is tastefully laid out and adorned with flower-beds, and individual specimens and groups of ornamental shrubs and trees, both evergreen and deciduous. There are broad stretches of lawn, and wide drives and walks leading gracefully from various parts of the campus to the College buildings. During the summer the conservatory contributes its hardy plants for lawn decoration.

Adjoining the campus on the south east, near the main College building, is the ATHLETIC FIELD of about four acres, used for base ball, foot ball, and other athletic sports.

The FARM comprises 65 acres; the ORCHARDS, the VINEYARDS, and the small fruit and vegetable GARDENS, nine acres; and the FORESTRY, seven.

All parts of the College grounds are used by the professors in charge of instruction in Agriculture and Horticulture for the purpose of practical illustration in their respective departments; they are also used for the work of the Experiment Station.

EQUIPMENT.

The MECHANIC ARTS DEPARTMENT is well equipped for all of the courses offered. The bench room is provided with forty-five carpenters' benches with full equipment of tools. In the forge room are twenty-four power blast forges, with anvils and complete tool equipments; also hand-drills, cutting-off machines, tire upsetter, special swagebox, etc. The wood-working machine room is supplied with nine ordinary turning lathes, one large turning lathe, one jig-saw, one universal saw-table, one wood-planer, one new two-spindle shaper and edge moulder. In the iron-working machine room there are three large engine lathes, one speed lathe, one large drill press, one sensitive drill (made by students), one large iron planer, one universal milling machine, one universal grinding machine, emery wheels, vises, and tool cutters of various kinds.

The CIVIL ENGINEERING DEPARTMENT is provided with the necessary surveying instruments, such as solar and engineers' transits, levels, a plane table and all accessories, as well as smaller instruments, chains, tapes, etc. For hydrographic work there is an unusually large supply of apparatus; a book gage; water meters of various types, automatic registers, etc. These, together with the weirs, flumes, etc., on the experiment farm, and the large number of measuring stations on the canals and rivers in the immediate vicinity, afford an excellent opportunity for thorough training in this work. In addition to the ordinary equipment of the drawing room, there are available such handy instruments as the slide rule, planimeter, section liner, etc. The library facilities for this course consist of most of the standard books in the various lines of engineering, as well as the standard periodicals.

The BIOLOGICAL LABORATORIES are located on the second floor with east and north exposures. They are well equipped for experimental work in the various courses in which the department offers instruction. The equipment includes, high-power Leitz and Bausch and Lomb microscopes; dissecting microscopes; condensers; microtome; freezing apparatus; micrometers; micro-spectroscope; photo-micrographic camera; Thoma-Zeiss hæmacytometer; hot air and steam sterilizers; incubator; refrigerators; paper and plastic manikins; a series of plaster models (human); analytical balance; a varied collection of microscopic slides; a well selected stock of microscopic glass-ware; utensils, dissecting instruments, media, and reagents.

The BOTANICAL LABORATORY has a good supply of apparatus with which to do systematic and microscopic work. The herbarium contains 3,000 mounted and named specimens to which the students have access at all times. There are 700 samples of economic seeds for use in economic botany. Among the general equipment may be mentioned a compound microscope for each student's use; 15 Bausch and Lomb dissecting microscopes; microtome; hand section cutters; stains; slides; and everything necessary for successful botanical work.

The orchard, with over 300 varieties of apples, pears, peaches, plums, apricots, and cherries; the vineyards, with 60 varieties of grapes, including the hardy and tender, or California, kinds; the forestry, containing many kinds of hardy trees and shrubs; and the small fruit and vegetable gardens are all used in connection with the work in botany and horticulture for practical illustrative purposes.

The CHEMICAL LABORATORIES occupy the north part of the Mechanic Arts Building. They are well lighted and ventilated, and are provided with hoods, gas, water, and individual tables for the use of students. They are also supplied with the necessary chemicals, chemical glass-ware, reagents, etc., for all of the chemical work of the experiment station and of the College courses in chemistry.

The MINERALOGICAL LABORATORY and the ASSAYING ROOM are provided with gas, water, furnaces, and all necessary facilities for the work offered in mineralogy and assaying.

The PHYSICAL LABORATORY occupies a suite of three rooms on the second floor, which are used for class purposes and for elementary laboratory work; and a room on the ground floor, used for electrical and magnetic measurements. The equipment is fairly complete, consisting of all the necessary pieces of apparatus for class demonstration; a set of apparatus for elementary laboratory work, sufficient for sixteen students working on the same experiment; and all pieces required for an experimental course in heat and electricity. Some of the more important pieces are balances and weights by Sartorius; platform balances; an Atwood machine, with aluminum friction wheels and electrical attachments; centrifugal apparatus; working models of levers and pulleys; air pumps; thermometers in different scales; barometers; hydrometers; hydraulic press; porte lumiere; telescope; microscope; an assortment of lenses, mirrors, and prisms; spectroscope; sonometer; siren; tuning forks; organ pipes; Chladni's plates; electric static machine; Leyden jars; electroscope; electrophorus; magnetometer; galvanometers of tangent, sine, ballastic, astatic, and D'Arsonval types; Wheatstone bridges, both box and wire forms; resistance boxes; standard resistance and standard cell; primary and storage cells of various kinds; Ruhmkorff coils; electric generators and motors; Crooke's tubes; and Geissler tubes.

The VETERINARY LABORATORY is supplied with surgical instruments, a modern operating table, an operating room, box stalls for patients, the necessary medicine, etc. Among the more important surgical instruments are a complete set of dental instruments, mouth speculum, tracheal and roaring instruments, neurotomy set, thermo-cautery, castrating and spaying instruments, obstetrical and parturition instruments, postmortem and diagnostic instruments, and other material found in a well equipped hospital. In this laboratory the agricultural students have practice and observation in the treatment of animals.

The DOMESTIC ARTS Department is provided with a model kitchen with all accessories; a dining room; offices; and sewing and millinery rooms, with the necessary machines, etc., required for thorough and practical work.

The equipment of the COMMERCIAL DEPARMMENT consists of a number of hard wood counting-room desks, arranged in such a way that students may either sit or stand, with a seating capacity for forty students; a complete set of modern banking furniture equipped with permanent blank books, letter files, stamps, copying press, college currency, in fact everything necessary in conducting a regular banking business; and wholesale, freight, real estate, and insurance offices provided with permanent blanks required in such offices.

The typewriting and stenographic room contains twelve machines,—four Smith Premiers, six Remingtons, one Underwood, and one Manhattan,—all provided with regular typewriter desks, and tables for stenographic practice.

The DAIRY DEPARTMENT is equipped for all the operations of butter and cheese making, milk testing, pasteurizing, and detecting adulterations. For butter making, there are a receiving vat, capacity 1,000 lbs.; a milk heater, capacity 200 lbs.; a Standard Russian Separator, capacity 1,500 lbs.; a De LaVal Separator for hand or power, capacity 450 lbs.; a combined churn and butter worker; a box churn; two styles of hand churns; a Mason Worker; a lever worker; an intermittent Pasteurizer; a Star Milk Cooler; and two cream vats. For cheese making, there are four small vats, capacity 300 lbs., for student practice; one larger vat for summer use; a Gang Press; two upright presses; and a curing room fitted with apparatus for determining temperature, moisture, etc. The MILK TESTING LABORATORY has four styles of Babcock Milk Testers; all the latest styles of milk, skim-milk, and cream test bottles; apparatus for detecting the adulterations of milk and milk products, and for testing acidity of milk and cream. The department has also an eight-horse power boiler and a six-horse power engine and a model cold storage for butter and cheese.

For the work in AGRICULTURE, general use is made of the College farm, stock, etc. For illustrative and experimental purposes, the farm proper is divided into 385 plats which, by crop rotation, proper fertilization and irrigation, and the use of the most improved machinery, are kept in a high state of cultivation. The farm is well equipped with the best farming implements and machinery. The live stock consists of Clydesdale and Shire grade draft horses; Short Horn and Jersey cattle; Shropshire sheep; and Berkshire, Chester White, and Poland-China hogs. The Experiment

Station dairy herd consists of about thirty choice grade cows. Other representative breeds of stock will be added as rapidly as means and accommodations will permit. These animals are used in class illustration, and for the various experiments of the Experiment Station. There is a recitation room into which the live animal is brought before the class.

The MODEL POULTRY HOUSE affords special facilities for illustrative and practical experimental work with poultry. Among the experiments in egg production that are being conducted are, the productive capacity of hens at different ages; the effect of exercise; the relative value of early and late hatched pullets; a comparison of six different breeds; the effect of varying treatment of breeding stock on egg fertility; a study of different methods in artificial incubation; the relative value of corn and wheat rations; a comparison of different nutritive ratios; the effect of caponizing.

The COLLEGE MUSEUM occupies rooms on the top floor of the main building. Each year the Museum is enlarged by the contributions of friends of the College. It is supplied with a large number of specimens illustrative of Geology and Palæontology, Vertebrate and Invertebrate Zoology, Mineralogy; also about four thousand five hundred species of the Rocky Mountain flora, and a large number of the woods of the United States. There is also an extensive collection of grains representing the produce of Utah and other States. A small collection of Indian and Polynesian products and curiosities has been made.

Contributions of fossils, ores, animals, relics, or other material of value to the Museum will be highly appreciated. All gifts are labeled and preserved, and the name of the donor is kept on record.

The LIBRARY AND READING ROOMS are on the first floor of the main building. The LIBRARY contains about eight thousand bound volumes and several thousand pamphlets. Additions are made from time to time to meet the requirements of the several departments. The subjects covered are general literature, including poetry and fiction, travel, history, biography, and criticism; political economy; sociology; metaphysics; general science; and such of the special sciences as are included in the courses of the several departments. The Professor of English, whose private library contains about two thousand eight hundred volumes, allows to advanced students in his department the privilege of the use of his library under his direction. Other professors also accord access to their private libraries as occasion may require. The READING ROOMS are open to the students and the general public every college day throughout the year. They are furnished with reading-slopes for current periodicals, and with reading-tables. Ninety of the best literary, scientific, technical, and agricultural periodicals are taken by subscription. Through the liberality of the publishers, forty-seven of the Utah newspapers are regularly received; and ninety-four of the best agricultural papers of the country are sent to the library in exchange for the publications of the Experiment Station. These are all placed upon the reading-slopes for the use of readers. The principal dictionaries and encyclopedias, including the Encyclopedia Britannica, American Cyclopedia, Appleton's Cyclopedia of American Biography, Allibone's Dictionary of Authors, Encyclopedic Dictionary, Century Dictionary, are kept in cases in one of the reading rooms within easy access of the readers.

STUDENT'S EXPENSES.

Tuition is free. All students pay an annual entrance fee of $5. The privileges of the library and the museum are free. In the physical, the chemical, and the biological laboratories, and in the workshops, and the cooking rooms, students are charged an incidental fee to cover the cost of materials used by them in their exercises. With proper care this expense need not exceed from $2 to $5 per year in each laboratory or industrial course.

The fee charged for a certificate of graduation in the short courses is $2.50; the fee charged for a degree is $5. All the students are held responsible for any injury done by them to the College property.

Good board and rooms can be obtained in private houses for from $2.50 to $3.50 per week. By renting rooms and boarding themselves, students are able to reduce the cost of room and board to less than $2 per week.

The College DORMITORY has accommodations for seventy. The second floor is used exclusively for women and the third floor for men, there being no communicating passage between the two. Two students may occupy one room, and by so doing the cost to each for board, room, and electric light, is $2.25 to $2.75 per week, according to the kind of room used. At these prices, students furnish their own carpets and bedding. The cost of furnished rooms and board, including fuel and light, is $3.50 per week.

Admission and Graduation.

CONDITIONS OF ADMISSION.

Candidates for admission to the Sub-Freshman Course and to the regular four-year courses must be at least fifteen years of age; to the Elementary Agricultural and the Preparatory and Manual Training courses, sixteen. Graduates of the district schools, and those who have completed the Preparatory Course of the College, are admitted without examination to the Sub-Freshman Course and to the Elementary Agricultural Course. Other applicants for admission to these courses must pass a satisfactory examination in the subjects of the Preparatory Course.* Those who have completed the work of the Sub-Freshman Course in the College are admitted without examination to the Agricultural, the Engineering (Civil and Mechanical), the Domestic Arts, the Commercial, and the General Science courses. Other applicants for admission to any of these courses must pass satisfactory examinations in the subjects of the Sub-Freshman Course.†

The classes in the Preparatory, Manual Training, and Five Months courses are divided into sections, which are graded in such a way as to be especially adapted to those who are not prepared to enter any of the more advanced courses. Students who are sixteen years of age or older are admitted to these courses without examination, except such as may be necessary in order to determine the section in which they can work to the best advantage.

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*For a description of these subjects, see "Preparatory Course."

†For a description of these subjects, see "Sub-Freshman Course."

SPECIAL STUDENTS.

Persons of mature years who, for satisfactory reasons, desire to pursue a special line of study, may be admitted as special students, provided they give evidence of ability to do the work desired. Special students may be allowed to graduate in any of the courses, on condition that they complete the required work and pass the necessary examinations.

REGISTRATION.

All students register at the beginning of the collegiate year for the work of the whole year. Changes in registration, and credit for work not registered, will be allowed only by special permission of the faculty.

GRADUATION.

Students who complete the Elementary Agricultural Course, the Short Commercial Course, or the Manual Training Course in Mechanic Arts or in Domestic Arts, receive certificates of graduation. The degree of Bachelor of Science is conferred upon those who complete any of the four year courses.

Instructors keep a record of recitations, marked according to the decimal system. In making up final examination percentages, this is counted one-third, the mid-term examination, one-third, and final examination for the term, one-third. But students who have been in a class only four-fifths, or less, of the term (or whose absences amount to one-fifth or more of the term) shall pass the whole subject on examination. In all four year courses, an average standing of not less than 75 per cent., with no grade less than 60 per cent., is required for graduation.

Courses of Study.

The College offers the following courses: (1) Agricultural Course, four years; (2) Mechanical Engineering Course, four years; (3) Civil Engineering Course, four years; (4) General Science Course, four years; (5) Domestic Arts Course, four years; (6) Commercial Course, four years; (7) Short Commercial Course, two years; (8) Elementary Agricultural Course, two years; (9) Manual Training Course in Domestic Arts, two years; (10) Manual Training Course in Mechanic Arts, three years; (11) Special Five Months Course; (12) Sub-Freshman Course, one year; (13) Preparatory Course, one year.

The AGRICULTURAL COURSE is arranged especially for the general education and scientific training of agriculturists. During the freshman and sophomore years, students take the necessary foundation work in chemistry, biology, botany, methematics, and other subjects. No pretension, however, is made in this course to train specialists in any one particular branch of science. The agricultural work proper is given during the junior and senior years, and includes a variety of subjects that are related directly to the successful scientific pursuit of agriculture.

The aim of the MECHANICAL ENGINEERING COURSE is to afford the student such training as will qualify him to deal intelligently with engineering problems in general and prepare him for a professional career. While the distinctive purpose of the course is to give instruction in the designing and construction of machinery, considerable instruction is given in municipal, irrigation, and general engineering, to form a basis for practice in these special branches. The instruction in all branches aims to blend the theoretical with the practical, so that the student may become familiar not only with the purely scientific phase of the work, but with its application to modern practice. As early as possible the student is brought into contact with practical problems, the graphical as well as the analytical method being used throughout their solution. Besides the practical tendency of the course, it has a high disciplinary value, and is especially adapted to develop originality of thought and action. The more strictly professional work may be classified as mathematics, physics, applied mechanics, drawing, and shopwork. Sufficient work in English, history, and other general subjects is given throughout the course to meet all ordinary demands.

The CIVIL ENGINEERING COURSE is designed to afford a training in those subjects which pertain to the profession of the civil engineer, in regard to different classes of structures and public works. The theoretical portion of the instruction is based largely on the courses given in the departments of Mathematics and Physics, and the results obtained are applied to practical problems in field work and engineering designs. The first two years are devoted to studies which belong naturally to the beginning years of undergraduate study; but the last two years are devoted largely to those subjects which have a more immediate relation to professional work. Unusual opportunities are afforded the student for practical hydrographic work by reason of the irrigation experiments on the station farm and the co-operation of the department with the Division of Hydrography of the United States Geological Survey and the United States Irrigation Investigations. Other prominent features of the course are the drawing room practice, and supplementary reading in the College library.

The GENERAL SCIENCE COURSE corresponds to the usual baccalaureate course in science in higher institutions of learning. It is designed to furnish a liberal and thorough education, embracing the broad field of general science, mathematics, language, history, and literature. Scientific subjects characterize the work of the course. During the freshman and sophomore years the students are thoroughly drilled in the subjects necessary to the more advanced special work of investigation. While the work of the junior and senior years as announced for 1900–1901 is all prescribed, students who desire to specialize along any particular line of science may, by permission of the faculty, be allowed to do so.

The DOMESTIC ARTS COURSE is in general the same as the four-year course in agriculture, except in the hours devoted to the shop and the farm. In place of these there are special studies adapted to women's work. The value and necessity of special training in household economy are too well known to require explanation. It will be seen that special attention is given to those branches of study in which young women require proficiency, and to those studies which tend to adorn life in the sphere in which women move. If the place given to floriculture and economic botany should require explanation, it may be sufficient to say that this line of work has a fascination for all classes, and everywhere claims the admiration and almost the affection of every person of true refinement. Household plants and the farm and village garden are always objects of interest and of importance to women, and often the source of physical health, inducing, as they do, exercise in the open air. This does not necessitate the added drudgery of physical work in the garden any further than pleasure may dictate. A special class is taught in floriculture, as adapted to window gardening, in the preparation of the soil, and in the growth of vegetables and small fruits. Exercises in the application of the knowledge acquired in the lecture room are a regular feature of the work.

The object of the COMMERCIAL COURSE is to broaden the intelligence of accountants, and to prepare students for positions as business men, who form a large class having a direct and important relation to the material, social, and political life of the nation. They should have associated with their technical work a knowledge of those subjects that will give them an enlarged view of their varied relations as citizens of the state. The College, therefore, offers here a much broader general education than is common in commercial courses. The technical feature of the course is a thorough training in penmanship, typewriting, stenography, commercial calculations, bookkeeping, business economics, political economy, history of commerce, and commercial law.

The SHORT COMMERCIAL COURSE is arranged for the accommodation of those who are unable to take the four-year course. It will qualify them fairly well for positions as accountants and stenographers.

The ELEMENTARY AGRICULTURAL COURSE, extending over a period of two years, is offered to those students whose time or means will not permit them to devote four years to a training for their future vocation. It is made as practical as possible in order to meet the demands of a numerous class.

The College also offers during the winter, a *special course of lectures* on practical agricultural topics, intended to reach those farmers who can leave their farms for a few short winter months only, but who appreciate the advantages of a knowledge of the fundamental principles underlying their business. The work for men includes agriculture, horticulture, entomology, botany, chemistry, veterinary science, and dairying, treated in a practical way, and continuing through one term to the end of March. For women, special work is given in sewing, household management, cooking, and such literary or other studies in addition thereto as the students are prepared to pursue.

The MANUAL TRAINING COURSE IN DOMESTIC ARTS extends through two years, and is offered for the benefit of those young women who do not wish to take the studies of the regular college course but desire to devote more time to the subjects of especial interest to women. Such other studies as the student is qualified to pursue may, with the consent of the faculty, be substituted for those offered in this course.

The MANUAL TRAINING COURSE IN MECHANIC ARTS extends through three years, during the whole of which the students spend four hours daily in the workshop. While the general object is to give students taking the course a good elementary education, the special aim is to make tradesmen in the three branches, carpentry, forging, and machine work. In the assignment of exercises in the shop and draughting room, the application of these exercises to practical construction or design is constantly kept in mind. In the shop, the method of instruction is to perform each new process before the class with such explanation as shall render plain each step in the process. Then each student is supplied with material and scale drawing of the article to be made, and proceeds with his work under the constant supervision of the instructor. The principles of economy, neatness, and rigid accuracy are insisted upon in the construction of even the most trivial objects. Each student, whether specializing in wood or iron, is required to take one year in wood-work, with which he should begin. In all cases, students are required to do at least one year's work with hand tools before beginning machine work.

Many farmers' sons find it impossible to enter upon their studies at the beginning of the year. The last legislature therefore made special provision for a FIVE MONTHS COURSE, beginning about the first of November and continuing until the spring vacation. The year is divided into two terms of two and three months respectively. The work of this course will be arranged, as far as possible, to suit the convenience of students.

In the SUB-FRESHMAN COURSE students are thoroughly drilled in the subjects of English, history, mathematics, and drawing, required for admission to the four year College courses

The PREPARATORY COURSE is arranged to accommodate those young men and women who have been deprived of educational advantages until they have reached an age when they cannot advantageously attend the district schools. The special aim is to prepare the students for admission to the more advanced courses of the College, and to provide such training as will be of most value to those who are unable to continue their educational work beyond this course.

AGRICULTURAL COURSE.

Freshman Year.	1st Term.	2nd Term.	3rd Term.
English 5	5	5	5
Mathematics 3	5	5	5
Physics 1	4	4	4
History 2	3	3	3
Shopwork*	2	2	2
	19	19	19

Sophomore Year.	1st Term.	2nd Term.	3rd Term.
Chemistry 1, 2	5	5	5
English 6	2	5	2
Math. 4 (a), (b)	5	Math. 4 (c) 5	Botany 1 5
Civil Gov	5	Biology 1 3	6
	17	18	18

Junior Year.	1st Term.	2nd Term.	3rd Term.
German 1	3	3	3
Botany 2	4	Chemistry 6 3	3
English 7	5	Horticulture 5	Entomology 6
Psychology	3	Biology 2 6	3
Biology 9	3	Mineralogy 2	Agriculture 1 3
	18	19	18

Senior Year.	1st Term.	2nd Term.	3rd Term.
German 2	3	3	3
Agriculture 4, 5	8	Agriculture 2 3	Agriculture 3 3
Horticulture	3	Vet. Science 6	6
Bookkeeping†	3	Geology 3	5
		Political Econ 3	
	17	18	17

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*Students spend six hours a week in shopwork, but it counts two hours on the basis of regular class work.

†Students spend six hours a week in bookkeeping, but it counts three hours on the basis of regular class work.

MECHANICAL ENGINEERING COURSE.

Freshman Year.	1st Term.		2nd Term.		3rd Term.
English 5	5		5		5
Mathematics 3	5		5		5
Physics 1	4		4		4
History 2	3		3		3
Shopwork	2		2		2
	19		19		19

Sophomore Year.	1st Term.		2nd Term.		3rd Term.
Chemistry 1, 2	5		5		5
English 6	2		5		2
Mathematics 4	5		5		5
Shopwork	2		2	Physics 3	3
Civ. Gov	5	C. E.* 5	2		4
	19		19		19

Junior Year.	1st Term.		2nd Term.		3rd Term.
Physics 2	6	C. E. 1	5		3
Mathematics 5	3		5		3
M. E.† 1	5	Mathematics 6	3	M. E. 2	2
Drawing 2	4		5	M. E. 4	5
Shopwork					5
	18		18		18

Senior Year.	1st Term.		2nd Term.		3rd Term.
M. E. 4	5		5		5
M. E. 3	3		3		3
English 7	5	C. E. 2	5	M. E. 8	5
M. E. 5, 7	6	M. E. 6, 7	6	C. E. 9	5
				Thesis	2
	19		19		20

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* Civil Engineering.

† Mechanical Engineering.

CIVIL ENGINEERING COURSE.

Freshman Year.	1st Term.		2nd Term.		3rd Term.
English 5	5		5		5
Mathematics 3	5		5		5
Physics 1	4		4		4
History 2	3		3		3
Shopwork	2		2		2
	19		19		19

Sophomore Year.	1st Term.		2nd Term.		3rd Term.
Chemistry 1, 2	5		5		5
English 6	2		5		2
Mathematics 4	5		5		5
Shopwork	2		2	Physics 3	3
Civ. Gov	5	C. E. 5	2		4
	19		19		19

Junior Year.	1st Term.		2nd Term.		3rd Term.
Physics 2	6	C. E. 1	5		5
Mathematics 5	3		5		3
M. E. 1	5	Mathematics 6	3	M. E. 4	5
C. E. 5	5	C. E. 7	3	C. E. 4	2
Drawing 2	1		1		1
		C. E. 3	2	M. E. 2	2
	20		19		18

Senior Year.	1st Term.		2nd Term.		3rd Term.
M. E. 4	5		5		5
C. E. 6	5	C. E. 2	5	C. E. 9	5
M. E. 3	3	M. E. 6	5	C. E. 10	5
English 7	5	C. E. 8	3	Thesis	3
	18		18		18

GENERAL SCIENCE COURSE.

Freshman Year.	1st Term.		2nd Term.		3rd Term.
English 5	5		5		5
Mathematics 3	5		5		5
Physics 1	4		4		4
History 2	3		3		3
Shopwork	2		2		2
	19		19		19

Sophomore Year.	1st Term.		2nd Term.		3rd Term.
Chemistry 1, 2	5		5		5
English 6	2		5		2
Mathematics 4	5		5		5
Civ. Gov.	5	Biology 1	3		6
	17		18		18

Junior Year.	1st Term.		2nd Term.		3rd Term.
German 1	3		3		3
Mathematics 5	3		5	Botany 1	5
English 7	5	Chemistry 6	3		3
Biology 9	3	Biology 2	6		3
Psychology	3	C. E. 5	2		4
	17		19		18

Senior Year.	1st Term.		2nd Term.		3rd Term.
German 2	3		3		3
Physics 2	6	Political Econ.	3	English 8	5
Botany 2	4	Chemistry 5	7		5
Horticulture	3	Geology	3		5
		Mineralogy	2		
	16		18		18

DOMESTIC ARTS COURSE.

Freshman Year.	1st Term.		2nd Term.		3rd Term.
English 5	5		5		5
Mathematics 3	5		5		5
Physics 1	4		4		4
History 2	3		3		3
Sewing 1	2	Sewing 3	2	Sewing 4	2
H. S.* 1	1				
	20		19		19

Sophomore Year.	1st Term.		2nd Term.		3rd Term.
Chemistry 1, 2	5		5		5
English 6	2		5		2
Math. 4 (a), (b)	5	Biology 1	3		6
H. S. 5	2	H. S. 6, 7	6	H. S. 9, 10	7
Civil Gov	5				
	19		19		20

Junior Year.	1st Term.		2nd Term.		3rd Term.
German 1	3		3		3
English 7	5	Math. 4 (c)	5	Math. 4 (d)	5
Biology 9	3	Biology 2	6		3
H. S. 12	4	Sewing 4	5	Botany 1	5
Psychology	3			Floriculture	3
Chemistry 7	1				
	19		19		19

Senior Year.	1st Term.		2nd Term.		3rd Term.
German 2	3		3		3
Botany 2	4	Chemistry 5	5	Entomology	5
Dairying	7	Geology	3		5
H. S. 13	5	Sewing 6	5		2
		Bookkeeping	3	English 8	5
	19		19		20

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* Household Science.

COMMERCIAL COURSE.

Freshman Year.	1st Term.		2nd Term.		3rd Term.
English 5	5		5		5
Mathematics 3	5		5		5
Physics 1	4		4		4
History 2	3		3		3
Shopwork	2		2		2
	19		19		19

Sophomore Year.	1st Term.		2nd Term.		3rd Term.
Chemistry 1, 2	5		5		5
English 6	2		5		2
Mathematics 4	5		5		5
Civ. Gov.	5	Biology 1	3		6
	17		18		18

Junior Year.	1st Term.		2nd Term.		3rd Term.
German 1	3		3		3
Physics 2*	6	Chemistry 6	3		3
Com'l Cal	5		5	Botany 1	5
Psychology	3	Bookkeeping	2		3
Penmanship†	2	Biology 2	6	Hist. of Com.	5
	19		19		19

Senior Year.	1st Term.		2nd Term.		3rd Term.
German 2	3		3		3
Botany 2	4	Com. Law	5		5
English 7	5	Geology	3		3
Bookkeeping	5	Bookkeeping	2	Bookkeeping	2
Typewriting	2		2		2
		Pol. Econ.	3	English 8	5
	19		18		20

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*Students who desire to do so, may omit Physics 2 and Chemistry 6, and take Stenography.

†Class in Penmanship meets daily.

SHORT COMMERCIAL COURSE.

First Year.	1st Term.		2nd Term.		3rd Term.
English 5	5		5		5
Mathematics 3	5		5		5
Physics 1	4		4		4
History 1	3		3		3
Penmanship	2	Bookkeeping	2		2
	19		19		19

Second Year.	1st Term.		2nd Term.		3rd Term.
Math. 4 (a), (b)*	5	Stenography	5	Botany 1*	5
English 6	2		5		2
Com'l Cal	5		2	History of Com.	5
Civil Gov	5	Com'l Law	3		5
Typewriting	2		2		2
		Political Econ.	3		
	19		20		19

ELEMENTARY AGRICULTURAL COURSE.

First Year.	1st Term.		2nd Term.		3rd Term.
English 3	5		5		5
Mathematics 2	5		5		5
Drawing 1†	2	Chemistry 6	3	Agriculture 1	3
Agriculture 4	5		2		2
Shopwork	2	Agriculture 3	5	Botany 1	5
	19		20		20

Second Year.	1st Term.		2nd Term.		3rd Term.
English 5	5		5		5
Mathematics 3	5		5		5
Horticulture	3	Veterinary Sc.	7	Entomology	5
Agriculture 5	7	Agriculture 2	3		3
				Shopwork	2
	20		20		20

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*Students who desire to do so, may omit Mathematics 4 (a), (b), and Botany 1, and take Stenography.

†The class in Drawing meets daily, but the work counts only two hours on the basis of regular class work.

MANUAL TRAINING COURSE IN DOMESTIC ARTS.

First Year.	1st Term.		2nd Term.		3rd Term.
English 1	5		5		5
English 2	5		5		5
Drawing 1	2		2		2
H. S.* 1	1	H. S. 2	5		2
Sewing 1, 2	5	Sewing 3	2	Sewing 5	5
	18		19		19

Second Year.	1st Term.		2nd Term.		3rd Term.
English 3	5		5		5
Mathematics 1	5		5		5
History 1	3		3		3
Sewing 5	3	Sewing 4	3	Sewing 6	4
H. S. 5	2	H. S. 8	2	Agriculture 5	3
Penmanship	2	H. S. 4	2		
	20		20		20

MANUAL TRAINING COURSE IN MECHANIC ARTS.

First Year.	1st Term.	2nd Term.	3rd Term.
English 2	5	5	5
Mathematics 1	5	5	5
Penmanship	2	2	2
Drawing 1	2	2	2
Shopwork	6	6	6
	20	20	20

Second Year.	1st Term.	2nd Term.	3rd Term.
English 1	5	5	5
Mathematics 2	5	5	5
History 1	3	3	3
Drawing 2	2	2	2
Shopwork	5	5	5
	20	20	20

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* Household Science.

Third Year.	1st Term.	2nd Term.	3rd Term.
English 3	5	5	5
Mathematics 3	5	5	5
Physics 1	4	4	4
Drawing 2 Shopwork	6	6	6
	20	20	20

SUB-FRESHMAN COURSE.

	1st Term.	2d Term.	3d Term.
English 3	5	5	5
Mathematics 2	5	5	5
English 4*	3	3	3
History 1	3	3	3
Drawing 1	2	2	2
Physical Cult. MillitaryDrill	1	1	1
	19	19	19

PREPARATORY COURSE.

	1st Term.	2nd Term.	3rd Term.
English 1	5	5	5
Mathematics 1	5	5	5
Geography 1	5	5	5
English 2	5	5	5
Penmanship	2	2	2
Physical Cult. Military Drill	1	1	1
	23	23	23

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* Class meets daily.

Departments of Instruction.

AGRICULTURE.

1. Rural Engineering. The spring term of the junior year in the long course and the corresponding part of the first year of the short course are given to the various topics embraced in the general subject of rural engineering. The work covers in a general way the following topics:

(a) *History, Drainage and Irrigation:* History of Agriculture, showing the successive steps by which the art has attained its present position; farm drainage, its practical effects; land needing drainage, and the different problems involved in laying out and putting in a system of drains; practical questions relating to irrigation; road making; and the selection, arrangement and management of a farm with reference to special systems to be pursued.

(b) *Buildings, Fences and Machinery:* How to build cheap, substantial farm cottages, barns, stables and pens; location and interior arrangement of farm buildings; development, care and use of farm implements and machinery; the mechanical principles involved in their construction and different adjustments affecting draught; fences and gates, their necessity, cost, kinds and construction; wood for gates and fences, time to cut, conditions favorable to decay and how to prolong durability; discussion of Utah state fence laws.

Assistant Professor Merrill.

2. Stock Feeding. A portion of the senior year is devoted to a study of the principles underlying the profitable feeding of farm animals. The composition and requirements of animal bodies, the chemical compositions of foods

necessary to supply these wants, the general laws of animal nutrition and the chemical action and values of the different kinds of food are discussed. The German Standard Rations are given thorough study, special work being done in compounding Utah foods. The student calculates the nutritive ratios, showing in what proportions the several foods may be used to make properly balanced rations for the different purposes of feeding, without the loss of more than a small percentage of any of the nutrients. A consideration of the proper foods for each class of animals, whether fed for labor, growth, milk or meat production, is made prominent. The progress and results of the feeding experiments at the various Agricultural Experiment Stations are also carefully reviewed and discussed.

PROFESSOR LINFIELD.

3. AGRONOMY. During the spring term of the senior year the following sub-divisions of this subject are taken up:

(a) *Soils:* Their origin, composition, physical and chemical properties, classification, amelioration and relation to climate; the general management of different soils and sub-soils with their relation to successful crop production.

(b) *Manures:* General principles relating to the use of manures; natural and artificial manures; the sources and composition, differences in character, and the value of liquid and solid manures of different animals for different purposes; handling and preservation of natural manures; application of manures to different soils and for various crops; reclamation of alkali soils and worn out soils; preservation of original soil fertility.

(c) *Farm Crops:* Their history, uses, composition and adaptability to climate, the cultivation, harvesting and preservation of different crops; the principle of rotation; the system of rotation best suited to this State, taking into consideration the distribution of labor, the production of manure, and the extermination of weeds; summer fallow; the management of meadows and pastures and the best kinds of tame grasses for the State, as shown by experiments at the Station and in other parts of the State; tillage as a means of conserving soil moisture.

ASSISTANT PROFESSOR MERRILL.

4. ANIMAL INDUSTRY.

(a) *Breeds of Live Stock:* This includes the history and description of the different breeds of stock found on the farm, their origin and development into the specialized animals of today; the effect of climate and management on the animals, and their adaptability to various localities and purposes.

(b) *Breeding of Live Stock:* This deals with the law of reproduction, heredity, reversion, cross-breeding, in-breeding, variation, selection; period of gestation, pedigree, etc.

(c) *Management of Live Stock* includes a practical discussion of the principles of breeding, with a full description of the methods of caring for the different classes of live stock from birth to final disposition.

(d) *Judging of Live Stock or Animal Exterior* aims to put in practice the knowledge gained in the class room; the students tell from exterior points the relative values of the animals for special purposes, and, as far as possible, give reasons for the decisions rendered.

PROFESSOR LINFIELD.

5. DAIRY HUSBANDRY. Dairying, as taught, deals principally with milk, its care and manufacture, both in the factory and dairy. The farm problem of milk production is discussed under "Animal Industry".

(a) *Milk:* The elaboration, composition and fermentation of milk; the testing of milk, with a description of the methods used in paying for milk by test and in determining the worth of milk. A brief outline is also given of the fermentation of milk, or bactoriology as applied to milk and dairy products.

(b) *Buttermaking:* The different methods of creaming milk and getting the best results, are described; the handling and ripening of the cream, churning, salting, working, packing, and marketing the butter.

(c) *Cheesemaking:* Cheddar cheesemaking is described; the making of a uniform product and dealing with practical difficulties are fully illustrated; a brief description is also given of the manufacture of other kinds of cheese, particularly of such kinds as may be made in a home dairy.

(d) *Factories:* Factory organization; the building, equipment, and management of factories are fully treated.

(e) *Practical Dairying:* The college dairy is equipped with the best modern apparatus for practical dairy work, and from 1,300 to 3,000 pounds of milk are handled daily; factory and farm dairy methods are illustrated, and the student becomes familiar with all phases of dairy work by actual practice in the dairy, the aim being to familiarize him with the best methods of practice as discussed in the class room.

PROFESSOR LINFIELD.

6. VETERINARY SCIENCE.

(a) *Elementary Course:* This course embraces a series of daily lectures extending through the winter term in both the Winter Course and the Elementary Agricultural Course. The work of this course embraces the science of health preservation. Attention is given to ideal sanitary conditions for different animals, pointing out common errors and suggesting corrections.

(b) *Advanced Course:* In the regular Agricultural Course the study of this science is begun the middle term of the senior year and continues during the rest of the year. The course includes: (1) *Veterinary Anatomy*, taught in part by lectures illustrated by charts, skeletons, etc., but mainly in the dissecting room, where various domestic animals are dissected and studied. During this term one or more horses are dissected. (2) *Materia Medica.* During the spring term general pathology. therapeutics, and surgery receive attention. (3) *Special Pathology* and *Therapeutics* (contagious and infectious diseases) and principles of horse shoeing are discussed.

(c) *The Free Clinic:* In connection with the work of the Veterinary courses, a free clinic is maintained. A large number of animals are treated. Clinics will be held every Monday during the winter and spring terms, to which diseased animals may be brought for free treatment, the operations on such animals being performed by students as far as possible.

ASSITANT PROFESSOR MERRILL.

CHEMISTRY.

PROFESSOR WIDTSOE.

ASSISTANT__________

1. ELEMENTARY CHEMISTRY. This is a study of the important facts and fundamental theories of chemistry; the laws of chemical combination; the writing of reactions, and practice in solving stoichiometrical problems, together with a careful consideration of the applications of chemistry in the arts and manufactures. Students taking this subject must also take the course in elementary practical chemistry. Three hours per week throughout the year.

2. ELEMENTARY PRACTICAL CHEMISTRY. This course supplements the preceding course, and furnishes the necessary practical preparation for qualitative analysis. The non-metallic elements, mainly, are studied with reference to their combinations with each other: their reactions are verified, and the facts and theories of the lecture room are tested by experiments. Six hours laboratory work per week throughout the year.

3. QUALITATIVE ANALYSIS. This course runs parallel with and supplements the descriptive study of the metals and their compounds. Under the direction of the instructor

in chemistry, the students apply with their own hands the re-agents necessary to determine the composition and properties of chemical compounds. They thus gain a practical knowledge of the methods of chemical analysis and manipulation. Each student is required to analyze and report on forty unknown substances. This work is deemed extremely important from an educational as well as from a practical point of view. Laboratory work occupies six hours a week for two terms.

4. QUANTITATIVE ANALYSIS. This is mainly a laboratory course, giving the student practice in the typical methods of proximate and ultimate quantitative chemical analysis. It aims also to give, in familiar talks, a due appreciation of the importance of accuracy and of the relation of quantitative analysis to theoretical chemistry. After the necessary introductory practice, samples of waters, soils, ores, agricultural products and foods are analyzed and reported upon. The work of the Experiment Station chemical laboratory furnishes a good opportunity for the study of methods of analysis.

5. ORGANIC CHEMISTRY. This course consists of a brief survey of the more important reactions and compounds of the fatty and aromatic series of hydrocarbons and their derivatives, together with a full discussion of the nature and influence of molecular structure Opportunity is given the student to prepare a number of organic compounds which illustrate in their preparation the processes of oxidation, reduction, substitution and synthesis.

6. AGRICULTURAL CHEMISTRY. This course consists of lectures and assigned readings from the best available literature on the subject. The student will be required, from time to time, to prepare brief essays on given subjects. The aim is to make the student familiar with what is known of the composition of the plant, and of the relation of the soil and the atmosphere to plant development, together with some of the unsolved chemical problems of agricul-

ture. Some attention will also be given to the chemistry of animal nutrition and dairy products.

7. CHEMISTRY OF FOODS. This is a laboratory course, and aims to make the students familiar with the constituents of the common foods. By the aid of the microscope and chemical re-agents, flour, bread, meats, peas, beans, spices, milk and other dairy products, and various vegetables, are separated into their components, and each component subjected to special tests. The study has an important bearing on the science of nutrition.

ANIMAL BIOLOGY.

PROFESSOR GOWANS.

1. ELEMENTARY ANATOMY AND PHYSIOLOGY. Lectures, recitations and laboratory work during the second and third terms. The purpose of this course is to familiarize the student with the important principles of the science of physiology, and furnish a basis for the study of hygiene. The student is encouraged to make a practical application of the laws upon which his health and proper physical development depend. Brown's *Physiology* for the laboratory and Martin's *Human Body*.

2. ELEMENTARY ZOOLOGY. Lectures, recitations and laboratory work during the second and third terms. The work is based on the dissection of a number of types which are studied in considerable detail. The purpose is to give the student a knowledge of the important characteristics of the principal groups of animals, and to give him such a training as will enable him to pursue the more advanced work with profit. Kingsley's *Comparative Zoology*.

3. ELEMENTARY BIOLOGY. Two lectures and three laboratory periods each week throughout the year. An introduction to the general principles of biology. (*a*) General biology, extending through the first half year. (*b*)

Elementary histology. (*c*) Elementary embryology. Divisions *b* and *c* taken together extend through the second half year. Either half year's work may be taken separately if desired. This course is a prerequisite to courses 4, 5, 6, 7 and 8.

4. GENERAL ZOOLOGY. Two lectures and three laboratory periods each week throughout the year. Elective. Classification, comparative morphology, and embryology of vertebrates and invertebrates, together with practical laboratory training in anatomical and embryological technique. This course must be preceded by courses 2 and 3.

5. ADVANCED PHYSIOLOGY. Elective. Lectures, conferences and laboratory work throughout the year. The subjects discussed are, the phenomena of life; the physiology of the cell; chemical composition of the body; the physiology of nutrition; irritability and contractility; physiology of the circulation; physiology of the nervous system and sense organs. The laboratory work is an introduction to experimental physiology. Prerequisite, courses 1 and 3.

6. HISTOLOGY. Two lectures and three laboratory periods each week during the first half year. Elective to those who have completed Course 3. A minute study of the elementary tissues, excepting the nervous system. Some time in the beginning is devoted to the preparation of stains, hardening, fixing and other fluids, each student being required to prepare the re-agents for his own use. A typical mammal is used for material. Prepared slides of human tissues are furnished the student. The course includes methods of fixing, dicalcifying, staining, imbedding, sectioning, mounting and drawing.

7. MAMMALIAN ANATOMY. Two lectures and two laboratory perieds each week throughout the year. This course is a study of the osseous, muscular, digestive, circulatory, respiratory, eliminative, and nervous systems. The laboratory work consists of dissections of a dog, cat and rabbit. Prerequisite, course 3.

8. NEUROLOGY. Two lectures and three laboratory periods each week during the second half year. (*a*) A study of the comparative structure of the brain and nervous system of the higher and lower animals; (*b*) Histology of the nervous system and sense organs. The course includes general histological technique, as in Course 6, and some special neurological methods not included in that course. Prerequisite, courses 3 and 6.

9. BACTERIOLOGY. Ten hours laboratory work each week during the first term. Such practice in bacteriological technique as the time will permit, together with the study of the more important known species of bacteria.

BOTANY.

PROFESSOR CLOSE.

1. STRUCTURAL BOTANY. Work in structural botany is required of the sophomores in the Agricultural Course, and of juniors in the General Science, Domestic Arts, and Commercial courses. The text book used is Gray's *Lessons in Botany*. The aim is to help students to become familiar with the higher plants, the terms used in describing them, and their classification. Students are provided with microscopes and dissecting instruments for laboratory work, but must furnish their own collecting and mounting outfits. Fifty mounted and named plants are required. The work is given five hours a week in the third term.

2. PHYSIOLOGICAL BOTANY. Juniors in the Agricultural Course and seniors in the General Science, Domestic Arts and Commercial courses spend three hours a week in recitation and four hours a week in the laboratory during the first term in physiological botany. Plant anatomy and the functions, growth and nutrition of plant organs are studied. Bessey's *Essentials in Botany* is used as a text book. All laboratory equipment and materials are furnished.

ENTOMOLOGY.

PROFESSOR CLOSE.

The work in Entomology is required of juniors in the Agricultural Course; of seniors in the Domestic Arts Course; of seniors in the Elementary Agricultural Course, and is elective with seniors in the General Science Course. It consists of recitations five hours and laboratory work four hours a week during the third term. Comstock's *Manual* is used as the text book and guide for laboratory work. The students are expected to acquire a general knowledge of the structure and classification of insects, especially the common insect pests. Insecticides and methods of applying them are given some consideration.

HORTICULTURE.

PROFESSOR CLOSE.

This subject occupies five hours a week during the second term of the junior year of the Agricultural Course. Three hours a week are also devoted to this subject during the first term of the senior year in the Agricultural, General Science and Elementary Agricultural courses.

1. PROPAGATION AND CARE OF PLANTS. During the first term's work *Principles of Plant Culture*, by Goff, is used as a guide in the study of the principles underlying an intelligent understanding of the care, growth and development of orchard and garden plants and trees. Instruction is also given in propagation by seeding, budding, grafting, layering, and by cuttings, and in the management of hotbeds and forcing houses.

2. POMOLOGY AND ORCHARD MANAGEMENT. In the second term the subjects of pomology and orchard management are taken up, including the choice of fruit lands, their cultivation, and the maintenance of fertility; the planting of orchards and other fruit plantations; choice of trees and

selection of varieties; pruning; insect and fungus pests, and means of combating them.

3. FLORICULTURE. This is taught during the third term of the junior year in the Domestic Arts Course. It deals with the propagation and care of house plants, the flower garden and the planting and care of the home grounds. So far as possible, the work in the class room is supplemented by actual practice in the greenhouse and on the College grounds. *Greenhouse Management*, by Taft, is used as a reference text book.

GEOLOGY AND MINERALOGY.

PROFESSOR WIDTSOE.

1. MINERALOGY AND ASSAYING. A systematic study is made of the important mineral species, according to Dana's classification. Much practice is given in blow-pipe analysis and determinative mineralogy; and, in connection with the former, the simple methods of dry assaying are taught. To those especially interested in the subject, opportunities are given for practice in all methods of dry and wet assaying.

2. GEOLOGY AND LITHOLOGY. A course is given in general and economic geology, in which particular attention is given to dynamical and structural geology. Along with the occurrence of rocks, their mineralogical composition is also studied. The instruction is based on a text book, but supplementary lectures are given. Weekly excursions give practice in geological field work, and material for reports.

METEOROLOGY.

ASSISTANT PROFESSOR DRYDEN.

This is an optional course for junior and senior students, and includes an elementary study of air pressure, humidity, temperature, rainfall, evaporation, wind velocity, theory of storms, methods of forecasting, and a general study of the United States Weather Service, with special reference to the relation of climate to health and to agriculture. The reading of the weather instruments in use at the College is made a part of the work.

[The College receives the telegraphic *weather forecasts* from the forecast official of the Department of Agriculture located at San Francisco. The forecasts are telegraphed each day (Sundays and holidays excepted) at government expense. The signal flags are displayed from the flagstaff of the College in full view of the valley below. These forecasts or warnings are of great value to the farming community. In 1893 the percentage of verifications of the forecasts of the Pacific coast division was 83.7. For Utah, which is part of this division, the percentage was likewise 83.7. Great value is placed upon these forecasts by the Department of Agriculture at Washington. From their timely warnings much property is saved both on sea and land. The Department considers that $10,000,000 is a conservative estimate of the value of property saved in 1895. Doubtless some means will be devised in the near future whereby these forecasts will be made more accessible to the farming community. An explanation of the flag signals is shown on the third page of the cover.]

PHYSICS.

PROFESSOR SNOW.

1. ELEMENTARY PHYSICS. Three hours lecture and recitation and four hours laboratory work per week throughout the year. The object of this course is to enable every student to obtain a practical acquaintance with laboratory methods of work, and with the elementary facts and laws which are the foundation of the science of physics. The lectures are illustrated by experiments performed by the instructor, and numerous problems are worked in and out of class. The laboratory work consists of about forty-five experiments, chiefly quantitative, performed by each student. The book used is Hall and Bergen's *Text-Book of Physics.*

2. HEAT AND ELECTRICITY. Five hours lecture and recitation and four hours laboratory work per week during the first term. This course is given largely to meet the needs of engineering students, and considerable attention is paid to the problems involved in the transformation of heat and electricity into other forms of energy. The laboratory work consists of individual experiments in heat, and in electrical and magnetic measurements.

3. ELEMENTARY MECHANICS. This involves an elementary consideration of the composition and resolution of forces, the measurement of forces, dynamics, hydrostatics, and pneumatics, supplemented with numerous problems selected from probable occurrences in the construction of buildings and machinery.

PROFESSOR JENSON.

Courses in advanced physics, including heat, steam engine, steam boilers, electricity, elements of mechanism, and other courses in higher and applied physics, are described under Civil and Mechanical Engineering.

MATHEMATICS AND ASTRONOMY.

PRESIDENT KERR.
ASSISTANT PROFESSOR LANGTON.
INSTRUCTOR PETERSON.

The elective courses in mathematics are not all given each year, but vary from year to year to suit the convenience of students who desire to specialize in mathematical science. Any elective course not applied for at the beginning of the year by at least three students properly prepared may not be given. If applied for by the requisite number of students, additional courses in quaternions, determinants, theory of equations, projective geometry will be given.

1. ARITHMETIC. This course consists of a thorough treatment of elementary arithmetic, based on Cook and

Cropsey's *Lessons in Arithmetic*, supplemented by many practical problems. Required of all students in the Preparatory Course. Four sections, five hours per week throughout the year. MR. PETERSON.

2. ARITHMETIC AND ALGEBRA. This course is required of all Sub-Freshman students. Four sections, five hours per week throughout the year.

ASSISTANT PROFESSOR LANGTON
and PROFESSOR GOWANS.

(a) *Advanced Arithmetic:* Special attention is given to the nature, origin, and development of number. The class recitation hour is devoted to thorough consideration of the fundamental processes of arithmetic, including contracted methods of multiplication and division, common and decimal fractions, factors and multiples, mensuration, the metric system of weights and measures, square and cube root, proportion, percentage and interest, and practical problems. Wells's *Academic Arithmetic*. First half-year.

(b) *Algebra:* This course includes a thorough treatment of the fundamental operations, use of parentheses, factoring, highest common factor, lowest common multiple, fractions, and simple equations. Wells's *Essentials of Algebra*. Second half-year.

3. ALGEBRA, GEOMETRY. Required of all Freshmen. Two sections, five hours per week throughout the year.

ASSISTANT PROFESSOR LANGTON.

(a) *Higher Algebra:* After a brief review of the subjects treated in Course 2 (b), the following subjects are considered: Simple equations, inequalities, involution and evolution, theory of exponents, radicals, quadratic equations, ratio and proportion, progressions, and binomial theorem. Wells's *Essentials of Algebra*. First half-year.

(b) *Plane Geometry:* This course includes the general properties of regular polygons, their construction, perimeters, and areas; regular polygons and circles, with problems for construction; maxima and minima; and methods for determining the ratio of the circumference to the diameter. Wells's *Plane Geometry*. Second half-year.

4. GEOMETRY, ALGEBRA, TRIGONOMETRY. Required of Sophomores. Five hours per week throughout the year.

PROFESSOR SNOW.

(a) *Solid Geometry:* Phillips and Fishers' *Geometry*. First term.

(b) *Advanced Algebra:* This course is based on Wells's *College Algebra*, and includes a thorough drill in the most important principles of higher algebra required in the engineering and other courses. First term.

(c) *Trigonometry:* The deduction of general trigonometric formulæ, the solution of plane and spherical triangles, and practice in the use of logarithmic tables. Wells's *Trigonometry*. Second Term.

(d) *Analytic Geometry:* General theory of co-ordinates; construction of loci; analytical geometry of the point, right line, circle, parabola, ellipse, and hyperbola; discussion of the general equation of the second degree between two variables; examples of transcendental and higher plane curves.

5. CALCULUS. Required of Juniors in the General Science and Engineering Courses.

PROFESSOR SNOW.

(a) *Differential Calculus:* Differentiations of algebraic and transcendental functions; development of the fundamental principles and formulæ of the differential calculus; applications to various problems in plane geometry and analysis, including indeterminate forms, maxima and minima, tangents, normals and asymptotes to plane curves; curvature, evolutes and involutes; expansion of functions in series; Taylor's and Maclaurin's theorems; use of infinitesimals of different orders; differentiation of a function of several variables; singularities of curves.

(b) *Integral Calculus:* Elementary forms of integration of rational and irrational functions; development of the formulæ of the integral calculus; successive integration; integrations of functions of two variables; application in determining lengths of curves, areas of plane curves, and of curved surfaces, and volumes of solids.

6. DESCRIPTIVE GEOMETRY. The representation of problems, and the solution of problems relating to geometrical magnitudes in space, including orthographic projections and development; projections of plane and solid figures; curved surfaces and tangent planes; shades and shadows; construction of maps; solutions of problems relating to geometrical magnitudes.

PROFESSOR JENSON.

7. MODERN GEOMETRY. Elective to those who have completed course 5; five hours per week throughout the year. This course treats the most important theorems and examples connected with harmonics, anharmonics, involution, projection (including homology) and reciprocation, including the following: Harmonic ranges and pencils, conics and focal projections; anharmonic ratios; homographic ranges; anharmonic properties of points on a conic, of tangents of a conic; poles and polars, reciprocation; properties of triangles; Pascal's and Brianchon's theorems; homographic ranges on a conic; ranges and pencils in involution; involution of conjugate points and lines; involution range on the conic, of a quadrangle, of a quadrilateral; constructions of the first and second degree; the principle of continuity, circular points and lines; real and imaginary projection, generalization by projection, and homology. Cremona's *Projective Geometry*, Russell's *Treatise on Pure Geometry*, and Lachlan's *Modern Pure Geometry*.

PRESIDENT KERR.

8. PLANE AND SOLID ANALYTICAL GEOMETRY, ADVANCED COURSE. Elective to students who have completed Course 6; five hours per week throughout the year. This course includes the equations and properties of the point, right line, and plane, of the sphere, cylinder and cone,

and of the paraboloids, ellipsoids, and hyperboloids; the modern algebraical methods of the conic sections; a short discussion of the general theory of higher plane curves and surfaces; applications of the differential and integral calculus to problems involving functions of two or more variables, such as development in series and transformation of functions, curvatures, areas of surfaces, volumes of solids, etc. The work of this course will consist in the discussion of portions of Salmon's *Conic Sections*, *Higher Plane Curves*, and *Analytic Geometry of Three Dimensions*.

PRESIDENT KERR.

9. DIFFERENTIAL AND INTEGRAL CALCULUS, ADVANCED COURSE. Elective to students who have completed Course 5; five hours per week throughout the year. This course embraces the elements of the theory of functions of imaginary variables; the various methods of integration, systematically treated; the elements of the theory of the elliptic functions; the mechanical and geometrical applications of the calculus treated more fully than in Course 5; and some of the more important cases of Differential Equations. Todhunter's *Differential Calculus* and Williamson's *Integral Calculus*.

PRESIDENT KERR.

10. HISTORY AND PHILOSOPHY OF MATHEMATICS. Elective to students who have completed course 9; one hour per week throughout the year. This course deals with the origin, development, and logical relation of the various subjects of mathematical science, including a series of synoptic lectures, which may be roughly outlined as follows: Mathematics among the ancients; Descartes and the discovery of analytic geometry; Newton, Leibnitz and the calculus; Hamilton and the invention of quaternions; modern geometry; mathematics and mathematicians of the United States. Ball's *History of Mathematics*, Comte's and Bledsoe's *Philosophy of Mathematics*, the *Encyclopædia Britannica*, and other works of reference.

PRESIDENT KERR.

11. GENERAL ASTRONOMY. Open to students who have completed course 4; two hours per week throughout the year. This course deals with the general facts and principles underlying the science of astronomy, with solutions of many problems, particularly those relating to the determination of latitude, longitude, and time. Instruction is given by means of recitations and lectures. Young's *General Astronomy*.

12. PRACTICAL ASTRONOMY. Open to those who have completed courses 5 and 11; two hours per week throughout the year. A continuation and completion of course 11. Theory and use of instruments—sextant, transit instrument, zenith telescope, and equatorial; various methods of determining longitude and latitude; graphical methods of predicting eclipses, etc. Doolittle's *Practical Astronomy*; Clarke's *Geodesy*.

CIVIL ENGINEERING.

PROFESSOR SWENDSEN.

1. HYDRAULICS. This course is devoted to the study of the general theories of Hydraulics, such as the laws governing the flow of water through orifices, over weirs, through pipes, and in open channels. The methods of measurement of water by means of water-meters, floats, etc. The course is based on Merriman's *Hydraulics*, and extends through the last two terms of the Junior year.

2. IRRIGATION. This is a course dealing with the location, design construction, and operation of irrigation canals; the design and construction of flumes, headgates, dams, reservoirs, etc. The questions pertaining to duty of water, evaporation, and seepage are also discussed. Wilson's *Irrigation* is used as a text. The course is given during the second term.

3. DRAWING AND DESIGNS. This course is a drawing room course intended to apply the theories developed in

Course 1, to problems in the design of weirs, pipes, flumes, etc. Estimates and working drawings are made of all designs considered. Two hours three times a week during the second term of the Junior year.

4. HYDROGRAPHIC SURVEYING. In this course a complete hydrographic survey is made in a locality particularly adapted to the work. All the streams are measured, the grades and cross-sections determined, etc. The different methods of stream measurements are applied, and the mapping of results is also made a feature of the course. Two hours, three times a week, during the third term of the Junior year.

5. ELEMENTARY SURVEYING embraces the adjustment and care of instruments, and a treatment of the general methods of farm, city, railway, topographical, and hydrographical surveying. The practical work in the field and drawing room receives particular attention. Two hours per week recitation during the second and third terms, and four hours field work during the third term of the Sophomore year; and three hours recitation with six hours field work during the first term of the Junior year. Raymond's *Surveying* and Searle's *Field Book*. For reference, Wellington's *Railway Location*.

6. HIGHER SURVEYING includes a treatment of triangulation systems, construction of stations, measurement of base lines, determination of the meridian, and the general application of precise methods in field and drawing-room practice. Two hours recitation and six hours field work per week during the first term of the senior year.

7. ROADS AND PAVEMENTS. Country roads are discussed along with highways, their location, construction, and maintenance; the pavement of city streets, and sidewalks; the materials used and the mode of construction. Three times a week during the second term of the junior year. Byrne's *Highway Construction*.

8. MASONRY STRUCTURES. Design and construction of

retaining walls, bridge piers, reservoir walls, arches, and chimneys; treatment of foundations under water, together with a careful study of cement, concrete, and building stones. Three hours per week during the second term of the senior year. Baker's *Masonry Construction*.

9. MUNICIPAL ENGINEERING. A detailed study of the questions pertaining to public water supplies, reservoir construction, filtration, distributing systems, engines, etc.; drainage, construction and capacity of sewers, treatment and disposal of sewage, etc. Five hours per week during the third term of the senior year. Farming's *Water Supply Engineering*.

10. HYDRAULIC MOTORS. General theory of impulse and reaction turbines and water pressure engines; collection and supply of water for power; measurement of water power; discussion of questions pertaining to the work and efficiency of water motors. Five hours per week during the third term of the senior year.

11. THESIS. This may consist of some original engineering design, a paper on some branch of civil engineering, or a discussion of some past achievement in the profession. It is expected to be a somewhat exhaustive treatment of the problem considered.

MECHANICAL ENGINEERING.

PROFESSOR JENSON.

1. ELEMENTS OF MECHANISM. This includes a consideration of the various forms of motion and its production; link motions, and their modifications as used in machinery; cam and wiper outlines; wheel trains and aggregate motions; design and construction of gear teeth; mechanism of special machinery. This subject deals with the purely geometrical relations of machinery, rather than with the form and design of articulating parts.

2. METALLURGY OF IRON AND STEEL. This embraces a study of the principal iron ores and their reduction according to modern methods, and the processes employed in the preparation of the iron into the various forms used for general construction purposes.

3. STEAM ENGINEERING. This begins with a study of the various forms of valve gears now in common use, which is followed by the study of the various forms of engines; the principles of thermodynamics according to the mechanical theory of heat and its application to the steam and other vapor engines; boilers and boiler design and construction; also methods of testing steam engines and steam boilers. A careful study is made of such data as have been secured from reliable tests in lieu of making actual tests.

4. APPLIED MECHANICS. A general discussion is given of the relation of forces and their effects in the production of stresses, strains, and motions; the derivation and application of formulæ, based upon the strength of materials as determined from actual experiment on full sized pieces, and used in determining the size of parts to be used in all engineering structures; the constructive qualities of the various woods and metals used in engineering practice. Much stress is laid upon this subject as being the chief corner stone in the foundation of an engineering profession.

5. DYNAMICS OF MACHINES. The general effects of the inertia of the moving parts of machines, calculation and designs of fly-wheels and governors, constitute the general work.

6. POWER MEASUREMENT AND TRANSMISSION. This is a study of theory of friction and suitable co-efficients for use with various materials and kinds of joints; friction brakes and dynamo meters; lubricators and their uses; transference of power by means of rigid contact, rope and belt driving, compressed fluids, and electrical transmission; power absorbed in driving the various machines in the shop.

7. MACHINE DESIGN. In machine design each student

is required to make a certain number of designs carrying out the principles of applied mechanics and dynamics of machines in all calculations. Boilers, parts of engines, pulley and gear shafts, and hangers, form suitable examples for this work. The class work consists of lectures and drawing.

8. DYNAMO MACHINERY. This course consists of lectures and assigned readings on the theory and practice of dynamo construction, special attention being given to forms and systems now in use. Shop methods will be illustrated as far as possible.

PROFESSOR SNOW.

9. THESIS. In general a graduating thesis in this course should consist of the execution of an original design with a descriptive dissertation, or a discussion of some current engineering problem, or the result of some original research, experimental or theoretical.

For a description of courses in hydraulics, municipal and irrigation engineering, materials of engineering, see "Civil Engineering".

For a description of courses in mechanical drawing, see "Drawing".

For shopwork, see "Mechanic Arts".

For other courses, see "Physics," and "Mathematics and Astronomy".

MECHANIC ARTS.

PROFESSOR JENSON.
INSTRUCTOR HANSEN.
INSTRUCTOR GRIFFIN.

I. CARPENTRY.

INSTRUCTOR HANSEN.

1. (*a*) Rudimentary exercises in sawing, ripping, planing, mortising, dove tailing, and the application of these to simple articles of furniture, furnish the details of

this course. Correct methods of using and handling tools are emphasized. First term, first year.

(*b*) Sharpening and adjusting carpenter's tools, and saw filing, followed by practice in making panels, doors, and sashes, constitute the work of this course. Second term, first year.

(*c*) This course consists of plain cabinet work, followed by the making of the standard carpenter's tool chest. Third term, first year.

2. (*a*) This course embraces thorough practice in all the branches of ordinary wood turning and other machine work in wood. First term, second year.

(*b*) In this course the principles and practice gained in the foregoing courses are applied to frame house building. If possible, practice in building a regular house will be given, but when such opportunities can not be had, small scale building is done at the shops. Second term, second year.

(*c*) The work of this course consists of inside finish of frame house, casings, mantels, etc. Third term, second year.

3. (*a*) The work of this course consists of practice of modern methods of stair building. First term, third year.

(*b*) This course consists of special work in cabinet making, with some instruction and practice in surface finishing. Second term, third year.

(*c*) Each student in this, the final course, will make some elaborate piece of furniture or other article. The work must be original in selection and design, subject to the approval of the department staff. Third term, third year.

4. (*a*) This course consists of selected exercises from Course 1 (*a*) Taken by freshmen during the first term.

(*b*) This course consists of selected exercises from courses 1 (*c*) and 2 (*a*). Taken by freshmen during the second term.

5. This is an elementary course in pattern making. Patterns of pipe fittings, groove pulleys, hangers and core boxes are sample exercises of this course. Taken by sophomores in engineering courses during the second term.

II. FORGING.

INSTRUCTOR GRIFFIN.

1. (*a*) This course consists of preliminary exercises, such as drawing, bending, twisting, and shaping, followed by exercises in iron welding and making iron tools. Accuracy in methods and results is insisted upon. First term, first year.

(*b*) The work of this course consists of practice in steel and iron welds, steel and steel welds and general work in steel tool forging and dressing. Chisels, punches, reamers, hammers, tin shears, nippers, etc., are sample exercises. Second term, first year.

(*c*) The work of this course consists of general vise work. Chipping, filing, hand polishing, and hand fitting of various kinds are sample exercises. Third term, first year.

2. (*a*) This course consists of horseshoeing, spring making and tempering, andirons, wicket gates, etc. First term, second year.

(*b*) The work of this course consists of making and repairing agricultural implements, plow points, cultivator teeth and frames, etc. Second term, second year.

(*c*) The work of this course consists of practice in wagon and carriage construction. Third term, second year.

3. This course consists of selected exercises from courses 1 (*a*) and 1 (*b*). Taken by freshmen during the third term.

4. This course consists of selected exercises from Course 1 (*c*). Taken by sophomores in engineering courses during the first term.

III. MACHINE WORK.

PROFESSOR JENSON.

1. (*a*) This course consists of preliminary exercises in straight and taper turning, drilling, planing, and milling, accompanied by instruction in the care and use of machinery. First term, second year.

(*b*) The work of this course consists of boring and chucking in the lathe, thread cutting, polishing, etc., and such other exercises on other machines as will be required in making shaft couplings, tap wrenches, etc. Second term, second year.

(*c*) The work of this course consists chiefly of making taps, spiral drills, fluted reamers, mandrils, with practice in finishing tempered articles on universal grinding machine. Third term, second year.

2. The work in this course consists of practice in actual machine construction. Speed lathes and sensitive drills may be taken as sample exercises. Third year.

3. This course is arranged for students in mechanical engineering, and consists of selected exercises from courses 1 (*a*), 1 (*b*), and 1 (*c*).

DOMESTIC ARTS.

I. HOUSEHOLD SCIENCE.

PROFESSOR COTEY.

EXPLANATION. The course for young women gives the same general training in English, German, Mathematics and Science that is given in the other courses, together with special studies adapted to woman's work.

1. LAUNDRYING occupies the fall term and consists of practical work alternating with lectures. The practice includes plain white washing and removing stains, clear starching, best methods of doing up fine mull, of ironing shirts, cuffs and collars, washing flannels, and cleaning silk and fine woolen goods. The lectures treat of the chemistry of the various materials used, and of hard waters and the process of softening them. Soaps, washing fluids, bleaching powders, blueings and starch, are discussed in their scientific and practical relations to laundry work.

2. MEATS, SOUPS, ETC. In this term the student receives instruction in selecting different cuts of meats and in the methods of cooking best adapted to them. Practice is given in roasting, braizing, broiling, in stews and pot roasts; in preparing fowls for cooking, and in making dressings; in boning, larding and skewering, in making croquets, scallops, etc. Instruction is given in preparing soup stocks, in making cream soups, vegetable soups and purees. Students are taught to prepare sauces suited to different kinds of meats and to make various meat pies, dumplings for stews and noodles for soups.

3. YEAST AND BREAD MAKING includes the making of various kinds of yeast, salt rising, wet and dry yeast; white and graham bread, corn bread, Boston brown bread; many varieties of rolls and buns. This work includes instruction in making baking powder and in making a great variety of the breakfast breads in which it is used; biscuits, muffins, gems, Johnny cake, pancakes and waffles. Part of this term is devoted to plain pastry cooking.

4. PASTRY COOKING includes practice in a variety of layer and loaf cakes, sponges, cream puffs, cookies, jumbles and fancy cakes, plain pastry, puff paste, tarts, patties, etc. The student is also given practice in a great variety of baked, boiled and steamed puddings; custards, blancmanges, whips, creams, jellies, etc. Instruction is given in laying tables for dinner and lunch parties, and in waiting on

tables. A few lessons are given in making taffy and sugar candies with French cream fondant. Instruction is given in cooking vegetables and serving dinners during both winter terms.

5. FRUIT WORK includes canning by various methods, and making all kinds of preserves and marmalade; different methods of making jellies, and experiments with green and ripe fruits; the making of all kinds of ketchups, spiced fruits, sweet and sour pickles, table sauces and meat relishes; the preparing of fruit juices, cordials and syrups. The latter part of the term's work is a course of lectures on the chemical nature of fruit, its acids and sugars; the value of fruit as food, and its action on the human system; the causes of fruit fermentation, and a study of antiseptics. Young women in the sophomore class are required to make use of reference books in the library, and to write essays upon the food value of fruit.

6. COOKING LECTURES treat of marketing and the selection of food; general rules of measuring and mixing; best methods of baking and boiling; deep and shallow frying; the general chemistry of cooking; carving and serving of food; the care of food before and after cooking, and the sanitary condition of the kitchen and store rooms. Cooking lectures given to the young women in the sophomore year take up advanced instruction on the above topics, and use *Chemistry of Cooking*, by Martien Williams; *Chemistry of Cooking*, by Ellen Richards; *The Rumford Kitchen Leaflets*, and other similar works, as references to further study of cooking.

7. COOKING PRACTICE includes all kinds of plain and some fancy cooking, covering in a general way all the subjects with which a housekeeper in moderate circumstances needs to be familiar. Demonstration lessons are given at various times throughout the term on subjects difficult of treatment in the general practice. A three-course lunch is served daily during the winter term. Members of the class

take turns in presiding as hostess at the table, carving and serving plates and looking after the needs of the guests; they also take turns in waiting upon the table. The confidence and skill thus acquired are invaluable to them.

8. SANITATION AND HYGIENE treats of sanitary conditions about the home; dangers from damp and unclean cellars, foul drains and sinks; ventilation, heating and lighting; instructions especially necessary to women on the care of personal health; home nursing, with illustrative lessons on changing beds for the sick.

9. SCIENCE OF NUTRITION is a study of foods, their chemical composition, characteristics, digestibility; the way in which they nourish the body; the effect of age, climate, and occupation on the amount and kind of food required. Books on foods by such authors as Yeo, Smith, Sir Henry Thompson, Green, Atkinson, Youmans, Parks and Hoy are used as references. Constant use is made of Government bulletins on the composition and digestibility of foods. A full set of charts and bottles illustrating the composition of food (used at Pratt Institute) are used as aids to the study.

10. DIETETICS AND INVALID COOKING teaches the best foods to be given in diseases with practice in their preparation and serving. The preparation of liquid diet, light diet and convalescent diet is taught the same as in hospital training schools. *Invalid Cooking*, by Mary Boland; *Food in Diseases*, by Yeo; *How to Feed the Sick*, by Dr. Gatchell, and other similar works, are used as texts.

11. HYGIENE AND HOME NURSING is taught by lectures and references to such authorities as Parks, Dio Lewis, Florence Nightingale, Stoney, Hampton, Shaw, Canfield and Stockholm.

12. SANITATION is a study of the conditions necessary to a healthful home — fresh air, pure water, heating, lighting and drainage. *Household Sanitation*, issued by the Collegiate Allumni Association, is used as a text book, together with

the *Sanitarian.* Reports of various Boards of Health are used as references.

13. HOUSEHOLD MANAGEMENT consists of lectures on the convenient arrangement and economical furnishing of rooms; the best methods of doing all kinds of housework, with a view to economy of time and strength; duties of mistress and servants; entertainment of guests, and many other subjects of interest to the home-maker. Books by prominent writers on these subjects are found in the library, also a number of periodicals of especial value to students of this class.

II. SEWING.

INSTRUCTOR COOK.

EXPLANATION. Besides the general advantages derived from industrial education, the object of this branch is to give a practical training in the sewing which every household requires. Neatness of work is insisted upon. The student provides material and makes her own garments.

1. HAND STITCHES. The work begins with hand sewing which consists of practice in the various stitches used in muslin and woolen goods; running, hemming, overhanding, overcasting, felling, gathering and stroking gathers, buttonholes, gusset, patching and darning, backstitch, basting, bands, bias cutting, blanket stitch, slip stitch, herring bone, chain and cross-stitch and feather stitch, French hem, French seam, etc.

2. CARE OF MACHINES AND MACHINE SEWING. Regular practice is given in the care of the machine, and its mechanism is illustrated Practice is given in running, hemming, tucking, ruffles, puffing, binding, etc.

3. DRESSMAKING. At least two muslin garments are made. A gown is cut out, basted and entirely made by the student.

4. DESIGNING, CUTTING AND FITTING. Instruction is given by talks on grace in design of costume and harmony of color. Special attention is given to hygienic modes of dress. The student is taught to make drawings of the costumes which she designs. She also learns to draft patterns from measurements. Further practice is given in cutting and fitting.

5. CUTTING AND FITTING. The student learns to draft patterns from measurements of basques, skirts, sleeves, princess gowns, French coats, capes, circulars, etc.

6. PLAIN DRESSMAKING. Plain gowns are drafted, cut and basted, fitted, draped, trimmed and entirely finished by the student.

7. FANCY WORK. This consists of hemstitching, drawn work, Kensington embroidery, Roman cut work, Spanish laid work, jeweled embroidery, Bulgarian embroidery and modern lace making.

COMMERCIAL BRANCHES.

PROFESSOR FARIS.

ASSISTANT PROFESSOR DRYDEN.

1. BOOKKEEPING. This subject includes the science of account-keeping, practical bookkeeping, business practice, business customs, and auditing and expert accounting. It is the major subject in the commercial course, and runs through two years.

(a) *Science of Accounts.* The course of instruction in the science of accounts embraces a careful study of the fundamental principles of bookkeeping. The principles of debit and credit are thoroughly developed by means of repeated drills and lectures. Journal and day-book entries are given careful attention. Much care and practice in penmanship, ruling, spacing, arrangement of work, etc., with special reference to figures, is exacted, thus giving students, in addition to principles on which the work is based, that manual training necessary for neat, accurate and rapid bookkeeping.

(b) *Practical Bookkeeping.* In this work a regular laboratory method is used. Each student assumes the responsibility of a bookkeeper, and actually keeps books according to the shortest and most approved methods in various kinds of business — such as grocery, general merchandise, jobbing, commission, etc.— including a thorough course in corporation work, college currency, bills of exchange, notes, checks, deeds, leases, mortgages, receipts, invoices and all other forms of commercial paper incident to the several kinds of business are used. All banking is done directly with the college bank. The work is largely individual, and so arranged that no two students arrive at the same result. Every step in the progress of a student is carefully examined, and by a rigid system of checking accuracy is exacted.

(c) *Business Practice.* Students form a business community, and each one not only keeps books but conducts and manages a business. All transactions are made either by correspondence or face to face with members of the class. Well furnished offices are run for the accommodation of the business circle. Students conduct the several offices, first as bookkeeper and then as manager. Careful attention is paid to the laws of Utah, and all business forms and transactions are made to conform to the statute of the state. Among other features a corporation is organized and conducted as a General Mercantile Co., complying strictly with the laws of the state governing such institutions.

(d) *Business Customs.* The fundamental principles of bookkeeping are here applied according to modern ideas of business, with its complex and exacting requirements. The subjects of banking, securities, exporting and importing, railroading, business correspondence and every day business transactions, are carefully examined from a practical point of view. Blanks and business forms of many kinds are placed in the hands of students for discussion and re-production.

(e) *Auditing and Expert Accounting.* The duties, qualifications and requirements of expert accountants, are carefully studied. Books suitable for different kinds of business with the most approved ruling, special columns, etc., are discussed. Much practical work is given in opening and closing sets of books used in various business enterprises.

2. COMMERCIAL CALCULATIONS. This consists of a drill in percentage, profit and loss, commission, interest, discount, storage, equation of accounts, partnership settlements, and all problems that the average business man is called upon to solve. Short methods are studied, and practical devices presented.

3. HISTORY OF COMMERCE. This work is done by recitations and lectures. The student makes a careful study of the principal countries of the world from which such staple articles of commerce as food, textile and mineral substances, metals and manufactured products are obtained. He notes the kinds and amount of such products from those countries, and the dependence of each upon every other for the necessaries and luxuries of life; he learns how markets are created and controlled; how waterways and railways afford a ready means of transportation and influence trade; and how the improved mail, postal, telephone and telegraph services facilitate the interchange of thought and also influence trade. Statistics are gathered showing the magnitude of the world's production. Practical commercial problems of the day are discussed in class.

4. COMMERCIAL LAW. This embraces a study of the customs and the law of the nature, formation, operation, interpretation, and discharge of contracts, including agency, partnership, corporation, bills, notes and checks, purchase

and sale of personal property, guarantee or suretyship, limitation of the time to sue, commission merchants and brokers, agreements for personal services, bailments, insurance, telegraphic communication, patents, copyright, trade marks, real estate conveyances, and the business and legal forms that are used to carry on trade.

5. STENOGRAPHY. This is elective with bookkeeping in the senior year of the four year commercial course and in the second year of the short course. Graham's system of stenography is taught. The class is given instruction one hour daily throughout the year.

6. TYPEWRITING. This is required of senior students in the four year commercial course and of the second year students in the short course. Three different kinds of machines are used, having the "universal" keyboard. One hour a day is devoted to practice throughout the year.

ENGLISH LANGUAGE AND LITERATURE.

PROFESSOR MACEWAN.
PRINCIPAL CAINE.
INSTRUCTOR MOENCH.
INSTRUCTOR HILL.
INSTRUCTOR BAKER.

1. GRAMMAR AND COMPOSITION *I.* In this course instruction is given in orthography; the parts of speech; the construction, analysis, and punctuation of sentences; the correction of common errors in language; and the writing of brief compositions. This course is correlated with the lessons in reading and in geography. Required of students in the Preparatory Course. Four sections, five hours per week throughout the year.

2. READING AND SPELLING. In this course Pope's Homer's *Iliad*, four books, *The De Coverly Papers*, *The*

Vicar of Wakefield, *Ivanhoe*, *The Princess*, *The Last of the Mohicans*, *The Vision of Sir Launfal*, *etc.*, and *The Merchant of Venice* are read. The purposes of the course are, the acquisition of a vocabulary, a knowledge of the contents of the books read, and correct oral expression. Special attention is given to spelling. Required of students in the Preparatory Course. Four sections, five hours per week throughout the year.

3. GRAMMAR AND COMPOSITION *II.* This is a more advanced course in grammar and composition, based on a text-book of the grade of the Whitney–Lockwood *Grammar*, or Miss Hyde's *Practical Grammar*, along with a book like Strang's *Exercises in English.* Subjects for essays and briefer written exercises are drawn from the books used in the reading and classics, and from the work in history. Required of students in the Sub-Freshman Course. Four sections, five hours per week throughout the year.

4. READING AND CLASSICS. The reading of this course includes Macaulay's *Essays on Milton and Addison*, Burke's speech on *Conciliation*, Shakespeare's *Macbeth*, Milton's *Paradise Lost*, *I.–III.*, and *Minor Poems.* These books are read with reference, first, to such oral expression as shall evince a general understanding of the thought; next, with reference to a more exact knowledge of the language—the meaning of words and sentences, the elementary qualities of style, the important allusions, and the general plan or structure of the production. Required of students in the Sub-Freshman Course. Four sections, five hours per week throughout the year.

5. (a) *English Grammar.* In this course, after a review of etymology, special attention being given to the formation of the verb, the structure of the English sentence is carefully examined. Nearly a term is spent in analyzing sentences from classic authors. This work occupies the first term.

(b) *Elementary Rhetoric.* This includes the principles of invention, the elements of style and the different forms of composition. The preparation of manuscript for the printer is taught in connection with the written work. Essays are required once a week, mostly reproductions, illustrating the laws of description and narration. The narrative poems from the text-book in literature, and *The Iliad* or *The Odyssey*, furnish matter for reproduction and study in versification. In connection with the study of literature during the third term, original essays in description and narration are required. This work occupies the second term.

(c) *Literature.* The first work in literature follows the elementary rhetoric, occupying the third term of the freshman year. It is a critical study of the short, complete classics—essays, poems of various kinds, speeches, sketches and stories. Enough of each author and his times is told in familiar lectures to awaken interest, and show the occasion of the production. In this work constant reference is made to rhetorical principles, and the style of different authors is carefully compared, and both style and form are studied with reference to the thought and sentiment. The following texts have been read:

Shakespeare's *Merchant of Venice;* Bacon's *Essays;* Milton's *l'Allegro*, *Il Penseroso*, *Hymn*, and *Lycidas;* Addison's *Sir Roger de Coverly;* Pope's *Rape of the Lock;* Gray's *Elegy in a Country Churchyard;* Goldsmith's *Deserted Village* and *Traveller;* Burn's *Cotter's Saturday Night*, and some other poems; Wordsworth's *Ode on Immortality*, and narratives from *The Excursion;* Irving's *Sketch-Book;* Tennyson's *Ulysses*, *Locksley Hall*, *Enoch Arden;* Dickens's *Christmas Carols;* selections from John Brown, Ruskin, Lamb, Macaulay, Huxley, Emerson, Bryant, Lowell, Holmes, Longfellow and Hawthorne.

6. ADVANCED RHETORIC. Instead of more advanced work in the general principles of style and composition, the rules of description, narration, exposition and argumentation are studied; and to illustrate and enforce these, some

masterpieces in each department are critically examined. Speeches of Burke and Webster furnish suitable material for the study of argument. Frequent oral and written exercises make the work entirely practical; during the last term debates, written and oral, are had on questions of general interest. Each student presents numerous written exercises. The work goes through the sophomore year—twice a week the first and third terms, and five times a week the second term.

7. HISTORY OF LITERATURE. The second course is given to a historical survey of literature, from Chaucer to the present time. Sufficient attention is given to the leading authors of the different periods to make evident the characteristics of their thought and style. The English drama receives special attention. Much of the time is given to the critical reading of such texts as supplement, but not duplicate the first and third courses, much of the study being reported in essays. This is the work of juniors and seniors for the first term.

8. LITERATURE. MASTERPIECES. The last term of the senior year is given to the study of longer masterpieces. Ordinarly all the important forms of literature have been laid under contribution—the drama, the epic, the lyric the novel, the essay, biographical and critical, the oration and history. One week is usually given to each piece selected. The work of the class-room is largely a report of students, either oral or written, on what they have done by themselves. The following texts, changing somewhat from year to year, have constituted the course:

Shakespeare, two of the great tragedies, *Hamlet*, *Macbeth*, *Lear*, *Othello;* Webster, *Reply to Hayne;* Burke, *Conciliation with American Colonies;* Macaulay, *Essay on Milton*, *Essay on Johnson*, and *Essay on Addison;* Milton, *Paradise Lost, I., II.; Samson Agonistes;* Carlyle, *Essay on Johnson*, *Essay on Burns*, *Hero as Prophet;* Tennyson, *Princess*, or selected poems; Motley, *Peter the Great;* Southey, *Nelson;* George Eliot, *Silas Marner;* Wordsworth, *Selected Poems;*

Byron, *Childe Harold;* Goldsmith, *Vicar of Wakefield;* De Quincy, *Revolt of the Tartars;* Defoe, *Journal of the Plague;* Addison, *Papers from the Spectator;* Browning, *Blot in the 'Scutcheon*, etc., or selected poems. The last two classes have had, instead of masterpieces, a term's study of the poems of Tennyson and Browning, respectively.

9. ELOCUTION. The course in elocution is open as an elective to those who have completed Reading and Classics. The principal aim in the course is to develop easy, natural readers, who will be able to express the thought of the author in a clear and impressive manner. It also includes practical work in recitation and impersonation. Each student is expected to learn and present a recitation to the class once each month, or as often as the number in the class will allow.

GERMAN.

ASSISTANT PROFESSOR ROBINSON.

This is the only foreign language taught in the institution, and is in four courses, three hours a week, during both the junior and senior years. The Germans are now the leaders in agricultural science. The advanced student of agriculture must be able to read the literature on his subject coming from the German press. Moreover, a knowledge of German is deemed essential to a liberal education. Oral and written exercises are accompanied by conversation, making more familiar the vocabulary and accustoming the ear as well as the eye to the words. In the time alloted only the framework of the language can be mastered; but enough is given to enable the student to prosecute independent study and consult German books.

After completing the *Joynes–Meissner Grammar* and *Reading-Book*, students are given such scientific reading material as will best equip them for using works of reference and the publications of scientific institutions and societies; or such selections from classic German literature as are adapted to awaken an interest and stimulate further reading. Dippold's *Scientific German Reader; Wilhelm Tell, Nathan der Weise, Egmont, Hermann und Dorothea, Reisebilder, Ekkehart, Peter Schlemihl Das Kalte Herz, Soll und Haben.*

HISTORY AND CIVICS.

PROFESSOR ENGLE.

1. UNITED STATES HISTORY. In this course, careful attention is given to the political, constitutional, and industrial development of institutions of the United States. Social life, political parties, territorial expansion, and the biography of leading historical characters are emphasized. The history of other nations is studied only so far as it may be necessary to make clear United States history. Required of students in the Sub-Freshman Course, and in the second year of the Manual Training courses. Four sections, three hours per week throughout the year.

2. ENGLISH HISTORY. This course opens with a review of the wanderings of the celtic and Teutonic races until the time of their settlement in the British Isles. The social, political, and constitutional aspects of English history are then studied with a view of showing the growth of civil liberty and evolution of modern institutions. The treatment of the Reformation includes the English and the German religious movements. In connection with modern English history a brief survey of the French Revolution and the rise of the German Empire is made. Supplementary reading is required from all the students in the course. Adams' *European History* and Montgomery's *Leading Facts in English History* are used as texts. Required of students in the freshman year of all the four year courses. Two sections, three hours per week throughout the year.

3. CIVIL GOVERNMENT. The work in this course is based on Fisher's *Civil Government* and Macy's *Bryce's American*

Commonwealth. Government, in its structure and mechanism, is carefully studied. Students are expected to read and interpret intelligently the constitution of the United States. Origin, development, and changes in governmental institutions receive careful attention. This work is closely correlated with United States history. Required of sophomores. Five hours per week during the first term.

4. POLITICAL ECONOMY. Distribution, production, and exchange are the leading topics in Economics. They are treated so as to throw light upon the practical problems of commercial and agricultural life. Questions relating to finance, taxation, banking, and exchange are to receive a discussion wholly of an economic nature. Bullock's *Introduction to Economics.* Occasional lectures are given on questions now agitating the public mind.

PSYCHOLOGY.

In this course the life of the normal individual is considered. Especial attention is given to those problems that have a living interest for the student, and find illustration in his every day life. The principal topics discussed are the relation of mind and body, habit, attention, memory, imagination, association of ideas, instinct, reasoning, emotion, will, and time and space phenomena. These and supplementary reading are required.

GEOGRAPHY.

ASSISTANT PROFESSOR ROBINSON.

The study of geography runs through the entire year of the Preparatory Course. To get an intelligent conception of the natural resources of countries, the physical features receive special attention. Astronomical and geological features are presented as far as the course will permit. The principal changes that have wrought the present conditions are studied and the atmosphere and water receive attention. Map drawing and frequent reviews are features of the course. Commerce and its effect upon nations is considered, as are also the classifications of mankind, animals, and plants.

DRAWING.

1. FREEHAND DRAWING. This consists in lessons and practice, perspective sketching from casts, and simple studies in light and shadow. Required of all freshmen, the exercises coming five times a week during the first term. It is made to include industrial design.

The junior students in the Domestic Arts Course have special training in designing and elementary art, suitable for young women.

ASSISTANT PROFESSOR ROBINSON.

2. MECHANICAL DRAWING is taught during the entire junior year. Students in this class are required to make working drawings, both detail and assembly, from measurement. Simple designs illustrating the principles taught in the class in mechanism form a prominent feature. Neatness and accuracy of execution determine largely the standard of marking.

PROFESSOR JENSON.
ASSISTANT PULLEY.

MILITARY SCIENCE AND TACTICS.

This course is in charge of an officer of the United States Army, detailed by the Secretary of War. The Government furnishes Springfield cadet rifles and equipment for infantry drill and two 3-inch rifled cannon for artillery instruction. A uniform of dark blue is worn by the cadets, the cost of which, including cap, is about fifteen dollars

The attention of students intending to enter College is called to the fact that this uniform has been found more serviceable than a suit of civilian clothes of the same price, and students are required to make arrangements so as to be able to order this uniform when they enter. On all occasions of drill, or when students are receiving any other military instruction, the uniform prescribed by the College must be worn.

1. INFANTRY. This includes all the movements described in the drill regulations of the U. S. Army, from gymnastic instruction in the setting-up exercises, the school of the soldier, and bayonet exercise, to the drill by company and battalion; exercise in estimating distances by sign and also by sound; target practice with rifle, for which the government makes an annual allowance of ammunition; instruction in signaling with flag, and in military telegraphy.

2. ARTILLERY. This embraces drill in the manual of the piece, and target practice when practicable.

3. THEORETICAL INSTRUCTION. During the winter months when outdoor drills are necessarily suspended, instrution is given by means of recitation from the drill regulations and by lectures on the elements of military science. Required of all students except juniors and seniors.

PENMANSHIP.

INSTRUCTOR MAUGHAN.

The course in penmanship consists of blackboard and individual instruction. It is required of all students in the Preparatory Course. The class meets daily, but the work counts only two hours per week on the basis of regular class work.

VOCAL MUSIC.

INSTRUCTOR MITTON.

A chorus of mixed voices, and also a male chorus, will be organized, composed of all students who wish to join;

and instructions in choral work of a high order will be given. Every effort will be made to cultivate a taste for music and to assist the students in acquiring a knowledge of the same.

PHYSICAL CULTURE.

INSTRUCTOR MOENCH.

The chief aim in this department is not so much to develop muscle as to relieve the mental strain. Special attention, however, is given to any desiring a course for development or to overcome physical defects.

The exercises consist of military, fancy and calisthenic marching; Swedish and free gymnastics; light and heavy work with apparatus; Indian clubs, dumb-bells, wands, pulley weights, rings, parallel and horizontal bars, ladder, ropes, horse, etc.

Library and Museum Accessions.

LIBRARY ADDITIONS.

Among those to whom the Library is indebted for books and other favors received during the year 1899–1900 are: Hon. J. L. Rawlins, Hon. F. J. Cannon, Hon. W. H. King, the several National Departments and Bureaus at Washington, and the colleges and universities of the United States and Canada.

PERIODICALS CONTRIBUTED.

The following is a list of periodicals received at the Experiment Station library, through the courtesy and liberality of the publishers, in exchange for the publications of the Station. Free access to these and other publications is allowed to college students and to the general public.

Agricultural Epitomist.
Agriculturist.
American Agriculturist, Middle and Western editions.
American Creamery.
American Cultivator.
American Fertilizer.
American Gardening.
American Grange Bulletin.
American Horticultural Review.
American Horticulturist.
American Poultry Journal.
American Sheep Breeder and Wool Grower.
American Swineherd.
Baltimore Weekly Sun.
California Cultivator and Poultry Keeper.
California Fruit Grower.
Chronique Agricole, Lausanne, Switzerland.
Clover Leaf.
Colman's Rural World.
Commercial Agriculture.
Connecticut Farmer.
Creamery Journal.
Cultivator.
Daily Public Ledger, Philadelphia.

Dairy, The, London, England
Dairy World.
Dakota Farmer.
Elgin Dairy Report.
Farmers' Advocate.
Farm, Field and Fireside.
Farm and Fireside.
Farmers' Guide.
Farm and Home.
Farmer's Home.
Farmer's Journal.
Farmer's Call.
Farmer's Magazine.
Farming, Toronto, Ontario, Canada.
Farm News.
Farm and Orchard.
Farmers' Review.
Farm, Stock and Home.
Field and Farm.
Gardening.
Grange Visitor.
Hoard's Dairyman.
Holstein Friesian Register.
Hospodar.
Illustrated London News.
Indiana Farmer.
Industrial American.
Industrialist.
Irrigation Age.
Journal of Board of Agriculture, London, England.
Journal of Agriculture.
Jersey Bulletin.
Kansas Farmer.
Live Stock Indicator.
Live Stock Report.
L'Industrie Laitiere, Paris, France.
Louisiana Planter.
Milch Zeitung, Bremen, Germany.
Mirror and Farmer.
Montana Fruit Grower.
Nebraska Farmer.
Neue Zeitchrift fur Rubenzucker Industrie, Berlin, Germany.
New England Farmer.
New England Florist.
Ohio Farmer.
Orange Judd Farmer.
Pacific Coast Dairyman.
Pacific Rural Press.
Practical Farmer.
Prairie Farmer.
Reliable Poultry Journal.
Revue Internationale des Falsifications, Amsterdam, Holland.
Rural Canadian, Toronto, Ontario, Canada.
Rural Life.
Rural Northwest.
Scottish Farmer, Glasgow, Scotland.
Southern Cultivator.
Stockman and Farmer.
Successful Farmer.
Sugar Beet.
Texas Farm and Ranch.
Ulster Agriculturist, Belfast, Ireland.
Wallace's Farmer.

Weekly Call, San Francisco.
Weekly Tribune, New York.
Western Agriculturist and Live Stock Journal.
Western Rural.
Wisconsin Agriculturist.
Wool, Mutton and Pork.
World, thrice a week.

The following Utah newspapers are also sent by the courtesy of the publishers:

Advocate, Price.
Advocate, Richfield.
American Eagle, Murray.
American, Spanish Fork.
Banner, Lehi.
Beobachter, Salt Lake City.
Blade, Deseret.
Box Elder News, Brigham.
Bulletin, Bingham.
Clipper, Bountiful.
Democrat, Eureka.
Deseret News, Salt Lake City
Enterprise, Ephraim.
Enquirer, Provo.
Express, Vernal.
Globe, Payson.
Herald, Salt Lake City.
Improvement Era.
Independent, Sandy.
Independent, Springville.
Inter-Mountain Advocate, Salt Lake City.
Item, American Fork.
Journal, Logan.
Mercury, Mercur.
Messenger, Manti.
Miner, Tintic.
Nation, Logan.
News, Beaver.
Press, Ogden.
Progress, Fillmore.
Pyramid, Mount Pleasant.
Record, Cedar City.
Record, Park City.
Republic, Nephi.
Review, Clear Lake.
Review, Ogden.
Rich County News, Randolph
Round-up, Randolph.
Sentinel, Manti.
Southern Censor, Richfield.
Standard, Ogden.
Times, Coalville.
Transcript, Tooele.
Tribune, Salt Lake City.
Utah Patriot, Park City.
Utonian, Provo.
Wasatch Wave, Heber.
Weber County Times, Ogden.
Women's Exponent.
Young Woman's Journal.

PERIODICALS PURCHASED.

The list of periodicals placed in the reading room upon subscription is as follows:

LITERARY MAGAZINES.

Atlantic Monthly.
Book News.
Century.
Contemporary Review.
Cosmopolitan.
Critic.
Dial.
Eclectic Magazine.
Edinburgh Review.
Education.
Educational Review.
Fortnightly Review.
Forum.
Gentlewoman.
Harper's Bazar.
Harper's Monthly.
Harper's Weekly.
Journal of Education.
Ladies' Home Journal.
Literature.
Literary Digest.
Literary News.
Literary World.
McClure's Magazine.
Munsey's Magazine.
Nation.
Nineteenth Century.
North American Review.
Outlook.
Review of Reviews, Am. Ed.
Scribner's Magazine.
Student's Journal.
University Chronicle.
Westminster Review.
Youth's Companion.

SCIENTIFIC AND TECHNICAL MAGAZINES.

American Florist.
American Kitchen Magazine.
American Machinist.
American Historical Review.
American Naturalist.
American Veterinary Review.
Architectural Record.
Art Education.
Art Journal.
Botanical Gazette.
Delineator.
Dietetic Magazine.
Electrician.
Engineering Magazine.
Etude.
Good Housekeeping.
Home Art.
House, The Beautiful.
Johns - Hopkins University Studies.
Journal of Amercan Folk Lore.
Journal of Association of Engineering Societies.
Journal of Veterinary Archives.
Le Bon Ton.
Library Magazine.
London Illustrated News.
Machinery.

Modern Art.
Music.
Nature.
Penman's Journal.
Political Science Quarterly.
Popular Science Monthly.
Public Libraries.
Publishers' Weekly.
Quarterly Journal of Economics.
Sanitarian.
School Review.
Science.
Scientific American — Building Edition.
Scientific American — Supplement.
Studies in Historical and Political Science.
Table Talk.
Torrey Botanical Club.
Transactions of American Society of Mechanical Engineering.
Werner's Voice Magazine.

AGRICULTURAL MAGAZINES.

American Bee Journal.
American Gardening.
American Veterinary Review.
Breeder's Gazette.
Country Gentleman.
Farmer's Magazine.
Farm Poultry.
Forester.
Journal of Horticulture.
Pacific Rural Press.

Alumni Association.

The Alumni Association was organized in June, 1899. All those who hold degrees in any of the courses of the College are eligible to membership. In the first two classes, three students were graduated with the degree of Bachelor of Civil Engineering (B. C. E.) Since 1895, five prescribed courses have been offered, but the degree in each has been Bachelor of Science (B. S.), the particular course being specified in the diploma.

OFFICERS.

Lewis A. Merrill, President,
Charles A. Jensen, First Vice-President,
John S. Baker, Second Vice-President,
Anna Beers, Secretary,
Arthur Stover, Treasurer.

EXECUTIVE COMMITTEE.

Joel Harris, Olla Barker, F. W. Merrill,
Anna Beers, William Peterson.

ALUMNI.

1894.

Erwin, Robert W., B. S., Chemist ...... Granite City, Ill.
Dougall, Bernard, B. C. E.* .... Springville.
Larsen, —, B. C. E., Railroad Mail Clerk, Salt Lake City.
Hoyt, Martha, B. S., Manager Creamery, Hoytsville.

1995.

Culmer, Will Fred, B. C. E., Civil Engineer .... Salt Lake City.
Merrill, Lewis A., B. S., Assistant Professor of Agriculture and Veterinary Science, A. C. U .... Logan.

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*Deceased.

1896.

Langton, Willard S., B. S., Assistant Professor of Mathematics and Astronomy, A. C. U	Logan.
Larsen, Christian, B. S., Teacher	Logan.
McLaughlin, Walter W., B. S.. Assayer	Silver City.
Merrill, Amos N., B. S., Dairyman	Richmond.
Merrill, Lorin A., B. S., Dairyman	Murray.
Rhead, Josiah L., B. S., Civil Engineer	Corinne.
Thomson, Joseph R., B. S., Teacher	Richmond.

1898.

Atkinson, Frederick H., Bookkeeper	Baker City, Oregon.
Beers, Anna, B. S.	Logan, Utah.
Bullen, Mabel, B. S	Richmond.
Harris, Joel J., B. S., Teacher	Logan.
Irvine, Alexander Ray, B. S., Teacher	Logan.

1899.

Baker, John S., B. S., County Surveyer	Logan.
Beers, William Duke, B. S., Civil Engineer	Antelope, Idaho.
Bullen, Ethel, B. S., Teacher	Richmond.
Gordon, Robert J., B. S., Civil Engineer	Cardston, Canada.
Hogensen, John Christian, B. S., County Fruit Tree Inspector	Newton.
Merrill, Fred W., B. S., Dairyman	Preston, Idaho.
Peterson, Joseph H., B. S., Farmer	Huntsville.
Peterson, William, B. S., Instructor in Mathematics, A. C. U	Logan.
Simmonds, Walter W.. B. S., Bookkeeper	Lewiston.
Stover, Arthur P., B. S., Assistant in Irrigation, U. S. Department of Agriculture	Provo.

Catalogue of Students.

POST GRADUATES.

Beers, Anna	Logan.
Foster, Clara	Logan.

SENIORS.

Crawford, Stanley	Manti, Utah.
Fleming, Burton Percival	Logan, Utah.
Homer, Rose	Oxford, Idaho.
Homer, William H., Jr.	Oxford, Idaho.
Jensen, Joseph William	Newton, Utah.
Maughan, Elizabeth Collins	Petersboro, Utah.
Nelson, William	Newton, Utah.
Taylor, George Francis	Plain City, Utah.

JUNIORS.

Bithell, Joseph James	Salt Lake City, Utah.
Cooper, Blanche	McCammon, Idaho.
Crane, Bert	Soda Springs, Idaho.
Evans, Esther	Malad, Idaho.
Perry, Almeda	Vernal, Utah.
Pulley, Edward Parley	Logan, Utah.
Smith, Charles Bailey	Boise, Idaho.
Stover, Mattie Eva	Logan, Utah.

SOPHOMORES.

Christensen, Mary Ida	Hyrum.
Culmer, Arthur Basil	Salt Lake City.
Davis, Edna Alma	Salmon, Idaho.
Foster, Elizabeth Curtis	Logan.

Goodwin, Margaret	Pocatello, Idaho.
Holmgren, Amanda	Brigham City.
Howell, William Maughan	Wellsville.
Irvine, Robert Leo	Logan.
Judah, Thomas Nelson	Lancaster, Kansas.
Miner, Idalah	Logan.
Neeley, Parley Hugh	Kamas, Idaho.
Stoddard, Leon Buckley	Sumpter, Oregon.
Williams, Arthur	Peterson.

FRESHMEN.

Adams, Hugh Robert	Logan.
Barrack, James Edward	Salmon City, Idaho.
Bennett, Harry	Blackfoot, Idaho.
Boley, Warren Chipman	American Fork.
Bybee, Maud	Lewiston.
Bybee, Harret Emma	Lewiston.
Caine, John Thomas	Logan.
Christensen, Amelia	Henry, Idaho.
Christensen, George A.	Newton.
Christensen, Jennie	Hyrum.
Cohn, Max D	Oneida, Idaho.
Cole, Horatius	Willard.
Crane, Elliot Simon	Soda Springs, Idaho.
Crockett, Fred Waldo	Logan.
Crosby, Jesse Edward	Springerville, Ariz.
Crozier, Harry Cullen	Point Lookout.
Dodds, William Bovee	Tooele.
Davis, Daisy Deane	Soda Springs, Idaho.
Davis, Mrs. Mary Violet	Logan.
Dudley, Mamie Eliza	Clifton, Idaho.
Eagar, George Albert	Springerville, Ariz.
Fisher, Ray Homer	Oxford, Idaho.
Fjeldsted, Estella	Logan.
Fryar, George Reed	Soda Springs, Idaho.
Fryar, Allen Porter	Soda Springs, Idaho.
Groesbeck, Marian	Logan.

Grundy, William Jefferson.........Loa.
Hess, Charles E....................Georgetown, Idaho.
Homer, Roy Fisher.................Oxford, Idaho.
Howell, Joseph Maughan..........Wellsville.
Jenson, Bertha Lenora ....Newton.
Knight, Harry Charles ....Castle Gate.
Kofford, James Arthur.............Porterville.
Larsen, Bertie Marie...............Mt. Pleasant.
Lunt, John Edgar..................Nephi.
Maughan, Josephine Farnes........Petersboro.
Maughan, May......................Logan.
Merrill, Ambrose Pond ....Richmond.
Merrill, Preston Reynolds..........Richmond.
Montrose, Ollie....................Smithfield.
Morgan, Samuel Perry.............Franklin, Idaho.
Morgan, Thomas Oliver............Franklin, Idaho.
Nebeker, Aquila Chauncey ....Lake Town.
Olson, Aaron.......................Logan.
Peterson, Sern Peter...............Newton.
Peterson, Thyra Louisa............Hyrum.
Pyle, Frederic Dale ....Graham, Wyo.
Rose, Anna Beatrice...............Soda Springs, Idaho.
Santschi, Eugene ....Castle Gate.
Stewart, Robert ....Plain City.
Simmonds, Etta ....Trenton.
Skeen, William Riley ....Plain City.
Tarbet, Joseph Abner...............Logan.
Taylor, Apollos Benjamin..........Willard,
Tebbs, Fielding Burnes.............Panguitch.
Tuttle, John Henry.................Manti.
Valentine, Ezra Anthony...........Brigham City.
Valentine, Hyrum Washington.....Brigham City.
Wittich, Charles Earnest ....Mercur.

SPECIAL.

Brangham, Irving Lewis...........Logan.
Cantwell, Harriet...................Logan.

Cranny, Adelbert Ezra	Logan.
Eames, Ezra	Logan.
Fisher, Thomas Lyon	Bountiful.
Groesbeck, Abby	Logan.
Hansen, Mathias	Bear River City.
Hart, Mrs. Adelia	Logan.
Holmgren, Lydia	Brigham City.
Larsen, David	Collinston.
Monson, E. P.	Franklin, Idaho.
Morrell, Joseph Roland	Logan.
Nielsen, Niels Peter	Logan.
Petersen, John Adolph	Logan.
Parker, Harry Cooper	Wellsville.
Senter, Clyde Almon	Shoshone, Idaho.
Tanner, Arthur Leroy	Provo.
Thomas, Nathan Abner	Logan.
Webster, Gertrude	Montpelier, Idaho.
Wilson, Amy Elizabeth	Logan.

SUB-FRESHMEN.

Adams, Samuel Joseph	Layton.
Affleck, Adam Alonzo	Logan.
Aitken, Charles	Kemmerer, Wyoming.
Ajax, Emrys	Centre.
Anderson, Abraham Christopher	Soda Springs, Idaho.
Anderson, Louis Julius	Brigham City.
Andrews, John Montgomery	Logan.
Andrews, Bella Montgomery	Logan.
Barker, Violet	Willard.
Barratt, James Hunter	American Fork.
Basset, Harold	Lago, Idaho.
Basset, Royal Clarence	Logan.
Batt, George	Logan.
Beckstead, Bertie	Swan Lake, Idaho.
Beckstead, Leo Samuel	Swan Lake, Idaho.
Beckstead, Estella	Whitney, Idaho.
Bigler, George	Collinston.

Bennett, Nellie	Lago, Idaho.
Blythe, Lula Annie	Salt Lake City.
Blythe, Florence Jane	Salt Lake City.
Boyle, Alexander	Lost River, Idaho.
Bunce, John	Logan.
Burton, William James	Custer, Idaho.
Bybee, Ruth	Lewiston.
Cahoon, Lerona Alice	Murray.
Caine, Blanche Elise	Logan.
Campbell, James Grant	Fairview, Wyoming.
Campbell, William George	Fairview, Wyoming.
Cazier, Henry Hallowell	Toano, Nevada.
Cazier, Mrs. Eliza Jane	Afton, Wyo.
Cazier, Willard	Afton, Wyoming.
Cazier, Nellie	Toano, Nevada.
Cazier, William Henry	Afton, Wyoming.
Child, Effie Uvinda	Fairview, Wyoming.
Christensen, Joseph Adolph	Newton.
Christensen, Walter	Richmond.
Christensen, Arthur Eugene	Newton.
Christofferson, Joseph	Newton.
Clawson, Leo Budge	Providence.
Connor, Annie Louisa	Park City.
Connor, Mary	Park City.
Cooper, Coral	McCammon, Idaho.
Cooper, Robert McEwan	Nephi.
Cordon, Edwin Voss	Willard.
Coy, Walter James	Plain City.
Crane, Elliot Simon	Soda Springs, Idaho.
Crawford, Lloyd William	Manti.
Crawford, Edmund	Manti.
Crockett, Ella	Logan.
Cotterell, Archie S.	Farmington.
Davidson, William Maughan	Greenville.
Davis, Cynthia	Auburn, Wyoming.
Davis, John Taylor	Soda Springs, Idaho.
Davis, James Ward	Soda Springs, Idaho.

Davis, Dora May	Clifton, Idaho.
Davis, Richard Bowen	Cherry Creek, Idaho.
Dewey, Charles Jesse	Deweyville.
Dudley, Allen	Clifton, Idaho.
Dudley, Pernecy Jane	Clifton, Idaho.
Duncan, Leonard Ellsworth	American Fork.
Eakins, Darlene Lorena	Red Canyon, Wyoming.
Eakins, James Adolphus	Red Canyon, Wyoming.
Eakins, John William	Red Canyon, Wyoming.
Egbert, Samuel Roy	Logan.
Emeis, Harry Prescott	Logan.
Farnsworth, Karl	Beaver.
Farrell, Lewis Steele	Smithfield.
Ferris, Arthur Leslie	Arco, Idaho.
Flack, James Milton	Franklin, Idaho.
Fonnesbeck, Amy	Logan.
Ford, Parley	Wallsburg.
Forrester, Annie	Smithfield.
Foster, Thora Alice Lutie	Logan.
Fridal, Knud, Jr.	Bear River City.
Fryar, Alfred Gilbert	Soda Springs, Idaho.
Fredrickson, Fred Peter	Brigham.
Fife, Lewis	Providence.
Gamet, Dezza Irene	Lost River, Idaho.
Gardiner, Roy William	American Fork.
Geddes, David	Plain City.
Gessel, Carl	Providence.
Grace, Mary	Weston, Idaho.
Greaves, Joseph Eames	Preston, Idaho.
Gulley, Clarence	Georgetown, Idaho.
Hanks, Alfred Lyman	Tooele.
Haight, George Hector	Farmington.
Haight, Jacob Clawson	Farmington.
Halvorson, Joseph	Castle Gate.
Hanson, Oliver	Logan.
Harris, Selden	Beaver.
Harrison, Eliza H	Liberty, Idaho.

Head, Joseph	Preston, Idaho.
Heed, Dora Ella	Plymouth, Idaho.
Henderson, Minnie Blanche	Clifton, Idaho.
Henderson, Seth	Clifton, Idaho.
Henderson, Laura	Clifton, Idaho.
Hepworth, James Edward	Salt Lake City.
Hiltbrand, John	Logan.
Hogan, Harriet	Smithfield.
Holladay, Carrie Mabel	Santaquin.
Hooker, Simon Sidney	Clifton, Idaho.
Howard, Charles Ashby	Rockland, Idaho.
Howell, Sarah Hettie	Yost.
Huber, Nephi	Midway.
Hugie, William Christian	Logan.
Hunsaker, Israel, Jr	Honeyville.
Hunsaker, Orpha	Honeyville.
Hunt, Vendella	Richmond.
Iverson, Orlando	Brigham City.
Izatt, Katherine Sproud	Logan.
Jacobsen, Christian	Logan.
Jacques, Norman Albert	Logan.
James, Garfield Clayton	Marysville.
James, Henry Robert	Logan.
James, Christofferson George	Providence.
James, Joseph Ralph	Providence.
Jarvis, Thomas William	Bloomington, Idaho.
Jenkins, John Lewis	Malad, Idaho.
Jenson, Peter	Logan.
Jenson, Alfred	Bear River City.
Jeppson, Severin Thatcher	Logan.
Johanson, James William	Logan.
Johns, Thomas L.	Bloomington, Idaho.
Johnson, Hans Chris	Logan.
Johnson, Caroline Elize	Preston, Idaho.
Jones, Marion William	Toano, Nevada.
Jones, Benjamin Franklin	Willard.
Jones, Archie Taylor	Card, Idaho.

Jones, Richard William	Malad, Idaho.
Jones, Robert Alexander	Ranesville.
Jorgensen, Arthur Rasmus	Bloomington, Idaho.
Judd, James Henry	Upton.
Kearl, Mary Emma	Laketown.
Kearl, George	Laketown.
Knight, George	Salt Lake City.
Koehler, August Carl	Midway.
La Fever, Ralph	Blackfoot, Idaho.
La Fount, Arthur Charles	Logan.
Laughney, Clarence	Ogden.
Leu, Henry	Willard.
Lish, Emma	Deweyville
Lloyd, John Lea	Sterling
Lowe, William Walker	Providence.
Loveland, George Elmer	Collinston.
Malstrom, Willard	Mapleton, Idaho.
Mathews, Eugene Denton	Providence.
Mathews, William	Grantsville.
Mattson, Ephraim	Logan.
Maughan, George	Greenville.
Maughan, Ida Lloyd	Wellsville.
Maughan, Ella	Logan.
Merrill, Bertha	Red Rock, Idaho.
Merrill, Frank Thomas	Mapleton, Idaho.
Merrill, Harrison	Mapleton, Idaho
Miles, Jennie Mahuldah	Peoa.
Miles, Mary Iscavinda	Peoa.
Moffatt, Joseph Smith	Meadowville.
Moore, Thomas Ellis	Castle Rock.
Morehead, Milton	Logan.
Morris, May	Kemmerer, Wyo.
Morrison, Hyrum	Franklin, Idaho.
Munk, Elizabeth	Logan.
McFall, Nellie Helen	Park City.
McKelvey, James	Houston, Idaho.
Nebeker, Laurena	Lake Town.

Neeley, Parley	Franklin, Idaho.
Newberger, Helena Emma	Logan.
Norton, Mary Marie	Weston, Idaho.
Nyman, Andrew B	Greenville.
O'Brien, William Leroy	Layton.
Olafson, Oscar Peter	Logan.
Olsen, Wilford	Weston, Idaho.
Osmond, James Arthur	Afton, Wyo.
Owens, Madison Samuel	Billings, Mont.
Pattersen, Joseph Peter	Bloomington, Idaho.
Poulsen, Nels Peter	Logan.
Petersen, Sadie Holladay	Santaquin.
Pope, John Williams	Vernal.
Rawson, Elsa Sabra	Ogden.
Rawson, William Wilkinsen	Ogden.
Redford, Robert Lloyd	Sterling.
Richardson, George P	Antelope, Idaho.
Richardson, Parley Cornelius	Plain City.
Riley, Roscoe	Sumpter, Oregon.
Roberts, Earnest Peter	Afton, Wyo.
Robinson, Thomas Arnold	Richmond.
Robinson, Alma	Logan.
Sampson, Irving	American Falls, Idaho.
Schvaneveldt, Alonzo	Preston, Idaho.
Sjoberg, Hulda Sophia	Millville.
Smith, Annie Elaine	Providence.
Spiers, Edwin	Dillon, Mont.
Smith, Joseph Alastor, Jr	Providence.
Siggard, Joseph	Brigham City.
Stallings, Mary Christena	Eden.
Stallings, John Arthur	Eden.
Stephens, John	Malad, Idaho.
Sparks, Earl Franklin	Nephi.
Starks, Leonard Elias	Marysvale.
Stoddard, Archibald W	Spencer, Idaho.
Stoddard, Delbert Chase	Georgetown, Idaho.
Stowell, Dan Absalom	Shelley, Idaho.

Swasey, Rodney Degrass	Mona.
Swendsen, Warren G	Blackfoot, Idaho.
Spidell, Ira Ossian	Riverdale.
Spidell, Bessie Ray	Riverdale.
Stephenson, Susan Marie	Mapleton, Idaho.
Talbot, George Lehi	Layton.
Talbot, Alfred	Layton.
Tarbet, William	Logan.
Taylor, Ella	Mapleton, Idaho.
Taylor, David Mathew	Payson.
Taylor, Charles Ezra	Plain City.
Taylor, Ulysses Carl	Willard.
Thomas, Daniel Preston	Bloomington, Idaho.
Thomason, William	Logan.
Thompson, Junius	Bear River City.
Titensor, Rose	Coveville.
Tibbets, George Samuel	Providence.
Toombs, Eliza Cordon	Willard.
Toombs, Roy Chandler	Carlin, Nev.
Trevethan, Thomas	Salt Lake City.
Tuttle, Lawrence Austin	Manti.
Waldron, Lucy Emmeline	Morgan.
Waldron, Levi Elias	Morgan.
Walton, Parley Pratt	Monida, Mont.
Weber, Jacob	Logan.
Watson, Milton Thomas	Park City.
Watt, Lynne	Mercur.
Webster, Ella Lillian	Montpelier, Idaho.
Welker, Abraham	Bloomington, Idaho.
Welker, Ray	Bloomington, Idaho.
Whitmore, Roscoe Phillip	Nephi.
Wilkinson, George Henry	Park City.
Williams, Manassa Woodville	Soda Springs, Idaho.
Williams, Christena	Salt Lake City.
Williams, Warren Sidney	Soda Springs, Idaho.
Wilson, Abigail	Logan.
Wilson, Margaret Helen	Eden.

Wilson, John Arthur	Providence.
Woodall, James Franklin	Soda Springs, Idaho.
Woolley, Earnest Rich	Paris, Idaho.
Wright, Wallace Bruce	Franklin, Idaho.
Wright, George William	Franklin, Idaho.
Wenger, Elias Justin	Ogden.
Wheeler, Beniah	Mapleton, Idaho.
Wheeler, John Andrew	Mapleton, Idaho.
Yeamans, George Washington	Afton, Wyo.
Young, Helen Annie	Park City.

MANUAL TRAINING.

MECHANIC ARTS.

Third Year.

Hansen, James P.	Spring City.
Linford, James Wesley	St. Charles, Idaho.
Thomas, Burton Lewis	Bloomington, Idaho.

Second Year.

Brown, Joel Thomas	Loa.
Grundy, Marion	Loa.
Howell, Elmer Vernon	Clifton, Idaho.
Lamb, James H.	Coalville.
McCulloch, Oliver	Logan.
Tarbet, Loyal	Logan.
Zundell, Joseph Michael	Willard.

First Year.

Allred, William Edsil	Lewiston.
Anderson, Hyrum	Meadow.
Atkinsen, James Alvin	Card, Idaho.
Bailey, Albert Jr	Honeyville.
Bennett, Calvin	Lago, Idaho.
Bens, Edmund	Soda Springs, Idaho.
Birchell, James Joshua	Fort Chesne.
Brough, William George	Porterville.

Brown, George Washington	Ogden.
Bybee, Amasa Marion	Lewiston.
Christensen, Frederick	Cove, Idaho.
Chugg, William Hyrum	Providence.
Crockwell, Earl Maderia	Salt Lake City.
Crookston, Robert Young	Logan.
Dahle, Frederick	Logan.
Davidson, Joseph Reid	Logan.
Dearden, Henry	Garrison.
Dickson, Able Joshua	Morgan.
Dickson, William Henderson	Morgan.
Dickson, John Henry	Morgan.
Ecklund, Fritz	Newton.
Erickson, James	Logan.
Fisher, John Ira	Bountiful.
Frank, Anthony Cole	West Weber.
Griffiths, Evan John	Diamondville, Wyo.
Hague, Jay Henry	Ketchum, Idaho.
Hansen, James Rudolph	Weston, Idaho.
Hanery, Moses	Rich, Idaho.
Hany Walter	Lost River, Idaho.
Howell, Orrin	Clifton, Idaho.
Hays, Frederick Albert	Dubois, Idaho.
Hill, Luther	Sterling.
Hughs, Gomer	Samaria, Idaho.
Hunsaker, Oakham Abraham	Honeyville.
Ingram, John Edward	Knarrah.
Jensen, Casper Smith	Richmond.
Johnson, Jacob Charles, Jr.	Logan.
James, Charles	Dayton, Idaho.
Kidman, Frederick, Jr.	Mendon.
Kirkman, George	Glenwood.
Kloepfer, Henry Phillip	Logan.
Labrum, William	Meadow.
Landreth, Horace Henry	Salt Lake City.
Larsen, Nels Reid	Georgetown, Idaho.
Latham, Oliver David	Antelope, Idaho.

Lloyd, Charles Alfred	Sterling.
Lund, Lewis James	Brigham City.
Mathews, Alma Moroni	Providence.
McGregor, James Davis	Perry, Idaho.
McFall, William	Park City.
Muller, Alma David	Providence.
Norton, Charles Harrison	Weston, Idaho.
Parker, George Gilbert	South Hooper.
Paxton, Charles	Kanosh.
Paxton, Frank	Kanosh.
Pearson, Eric	Meadow.
Petersen, Joseph Hans	Baker City, Oregon.
Porter, Thomas Harmon	Logan.
Robinson, Isaac	Garrison.
Sidwell, Lafayette Mills	Manti.
Smith, Joseph Franklin	Wardboro.
Sonne, Ola	Logan.
Stanffer, John	Providence.
Stevens, William Walter	Montpelier, Idaho.
Swasey, Dudley	Provo.
Swenson, Hyrum	Lago, Idaho.
Wangsgard, James Henry	Huntsville.
Wells, Carson Fordham	Willard.
Wilkinson, George Henry	Park City.
Williams, James Clyde	Soda Springs, Idaho.
Woodward, Cecil	Franklin, Idaho.

DOMESTIC ARTS.

Darling, Elizabeth	Greensville.
Eames, Sarah Greaves	Preston, Idaho.
Edwars, Etta	Willard.
Greaves, Hattie	Preston, Idaho.
Groesbeck, Susie	Logan.
Harding, Clarice	Willard.
Harrison, Lilian Clara	Auburn, Wyo.
Hansen, Marie	Logan.
Hendrickson, Cora Blanche	Collinston.

Hess, Edna	Georgetown, Idaho.
Hess, May	Georgetown, Idaho.
Hughes, Claudie	Willard.
La Fount, Elsie	Logan.
Lowe, Addie	Franklin, Idaho.
Merrill, Jessie	Mapleton, Idaho.
Miles, Zina Estella	Peora.
Parkinson, Susie Smart	Franklin, Idaho.
Parkinson, Eva	Franklin, Idaho.
Powers, Lydia May	Smithfield.
Pratt, Clara Parkinson	Logan.
Skeen, Mary Ellen	Plain City.
Smart, Mada	Logan.
Smith, Victoria	Mantua.
Stallings, Margaret Janette	Eden.
Stewart, Mary	Plain City.
Stewart, Grace	Wardboro, Idaho.
Stewart, Stella	Wardboro, Idaho.
Warner, Esther Leona	Willard.
Warner, Diana Elmina	Willard.

Second Year.

Adams, Melinda	Layton.
Adams, Lily	Layton.
Mattson, Emma Leda	St. Charles, Idaho.
Nebeker, Effie	Logan.
Zundell, Marie Estella	Willard.

WINTER DOMESTIC ARTS.

Anderson, Tenie	Logan.
Cox, Irene	Fairview.
Crockett, Ruth	Preston, Idaho.
Gessel, Annie	Providence.
Lamereaux, Lulu Ray	Logan.
Lundberg, Annie	Logan.
Stallings, Mrs. Mary	Eden.
Tanner, Emily	Ogden.

AGRICULTURAL WINTER COURSE.

Gull, Albert	Meadow.
Hansen, Eugene	Collinston.
Jones, Wiley	Lost River, Idaho.
Marble, Edwin H.	Deweyville.
Petersen, John	Morgan.
Pritchet, John	Fairview.
Stranger, George	American Fork.
Woolsey, John Richard	Kaysville.
Thompson, Edmund Logan	Logan.

SUMMARY OF STUDENTS.

Post Graduates	2
Seniors	8
Juniors	8
Sophomores	13
Freshmen	59
Special	20
	110
Sub-Freshmen	249
Manual Training:	
Mechanic Arts	81
Domestic Arts	34
Winter Courses	17
	381
Total	491

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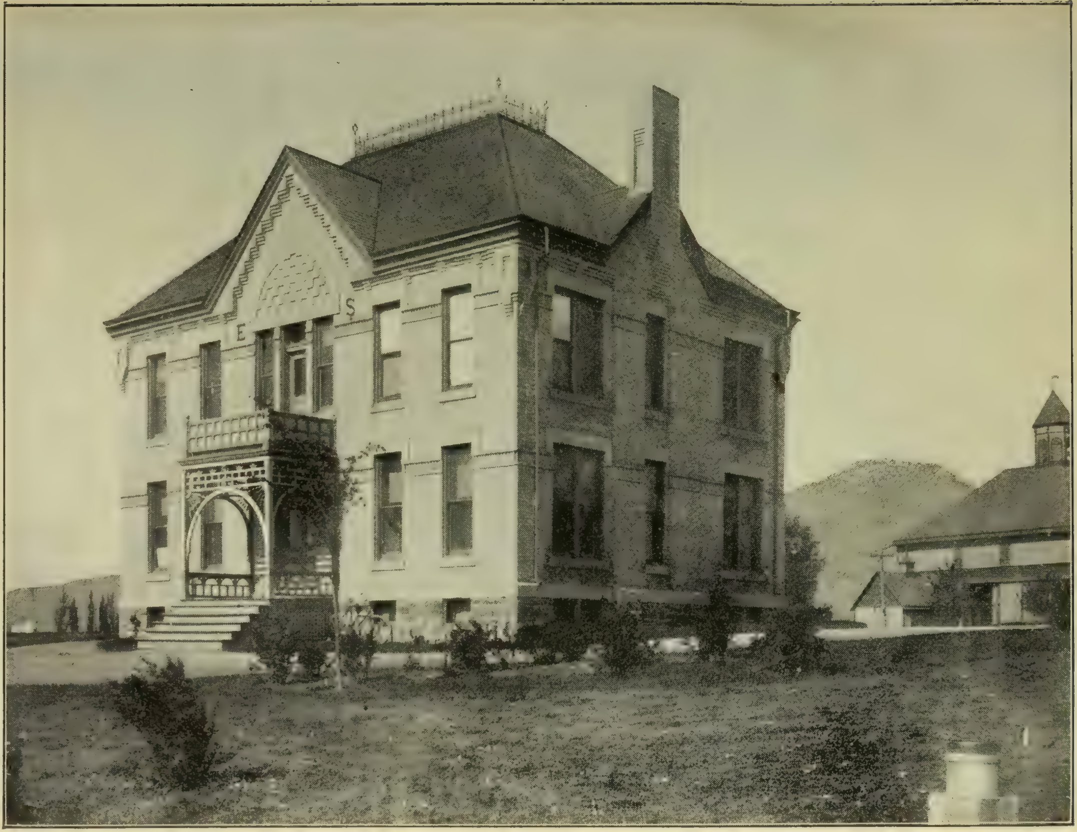
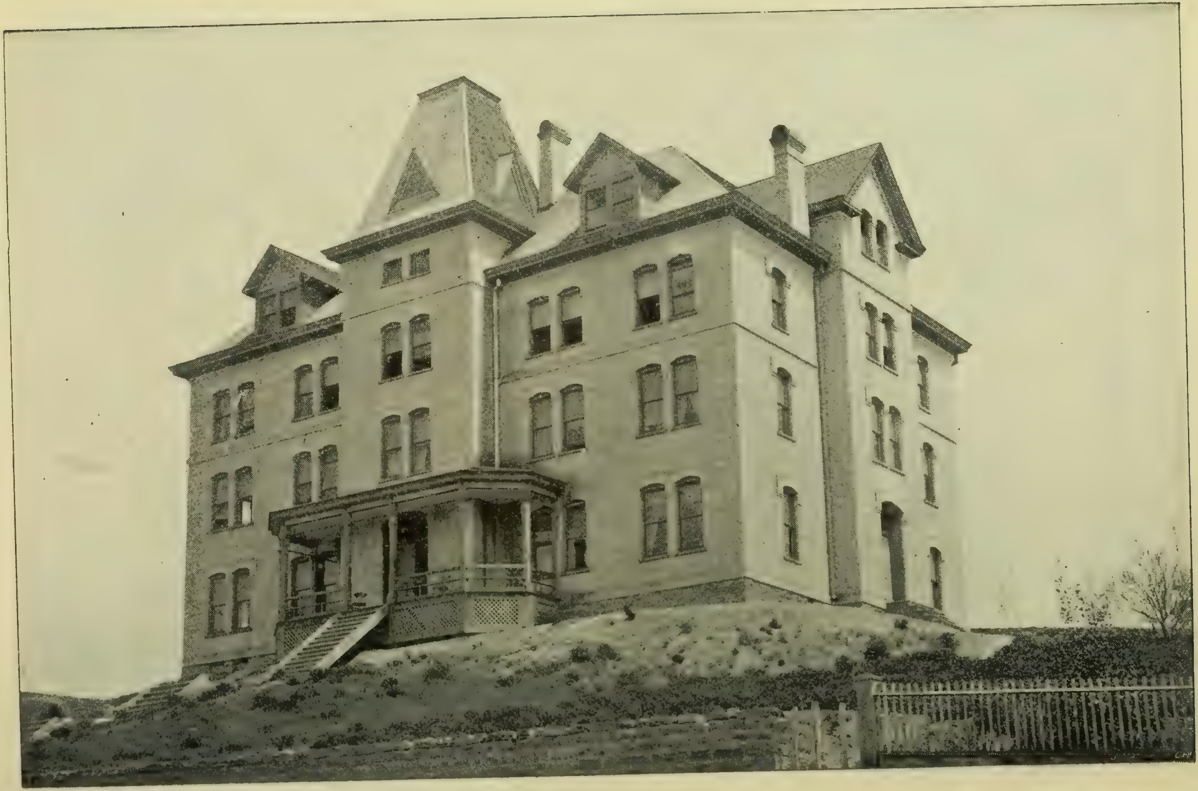


EXPERIMENT STATION BUILDING.



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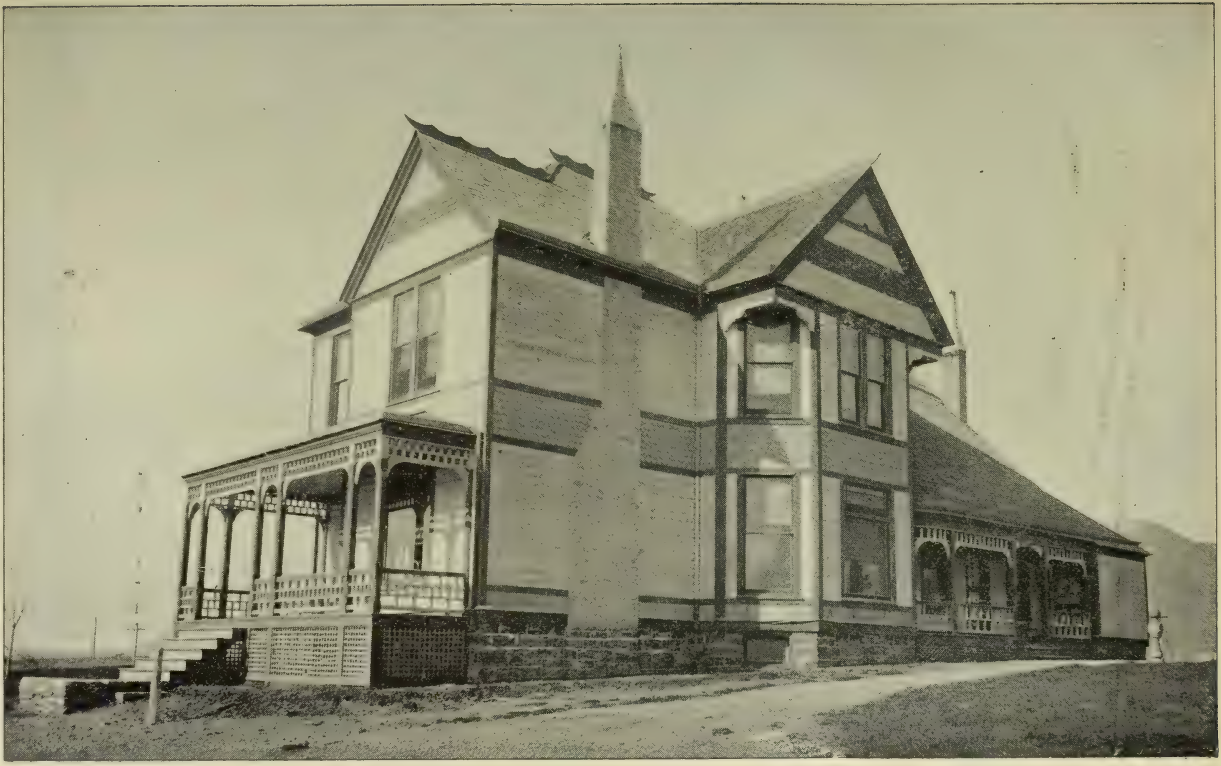
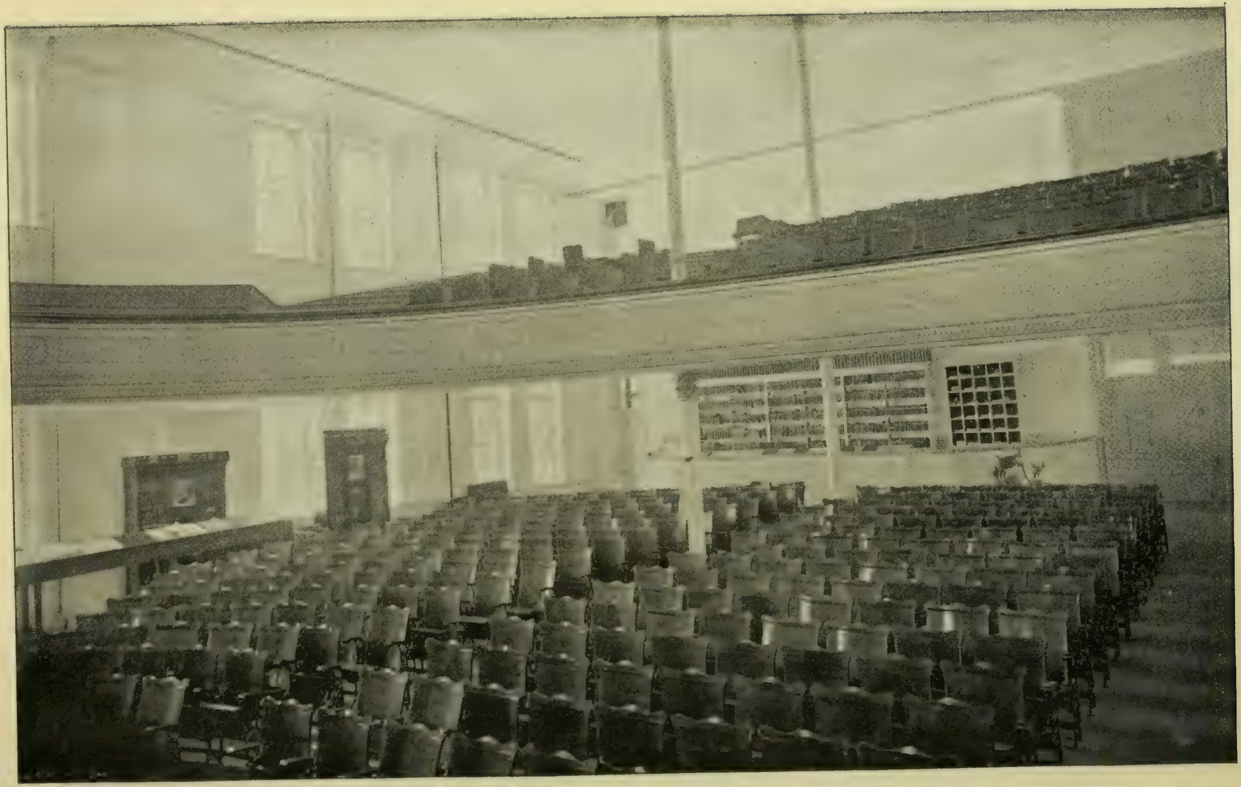


RESIDENCE OF THE PRESIDENT.



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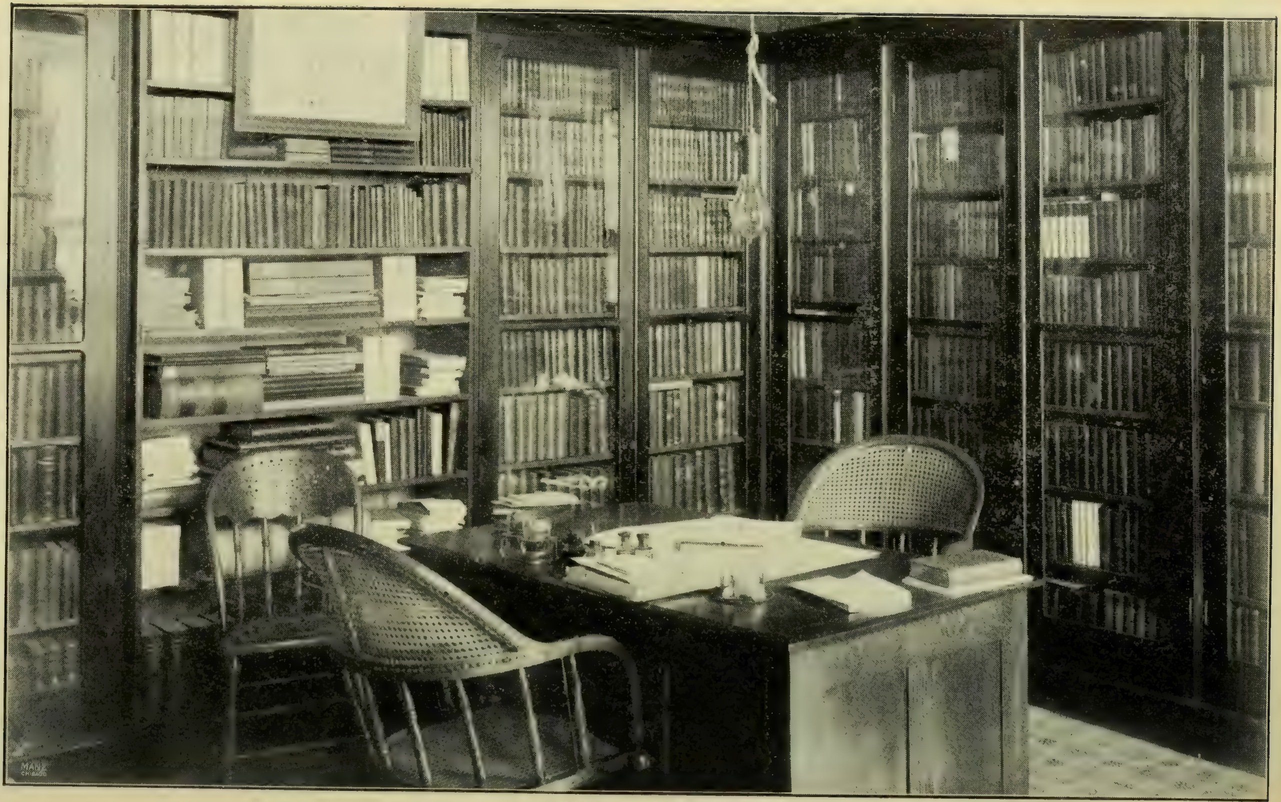
PRESIDENT'S OFFICE.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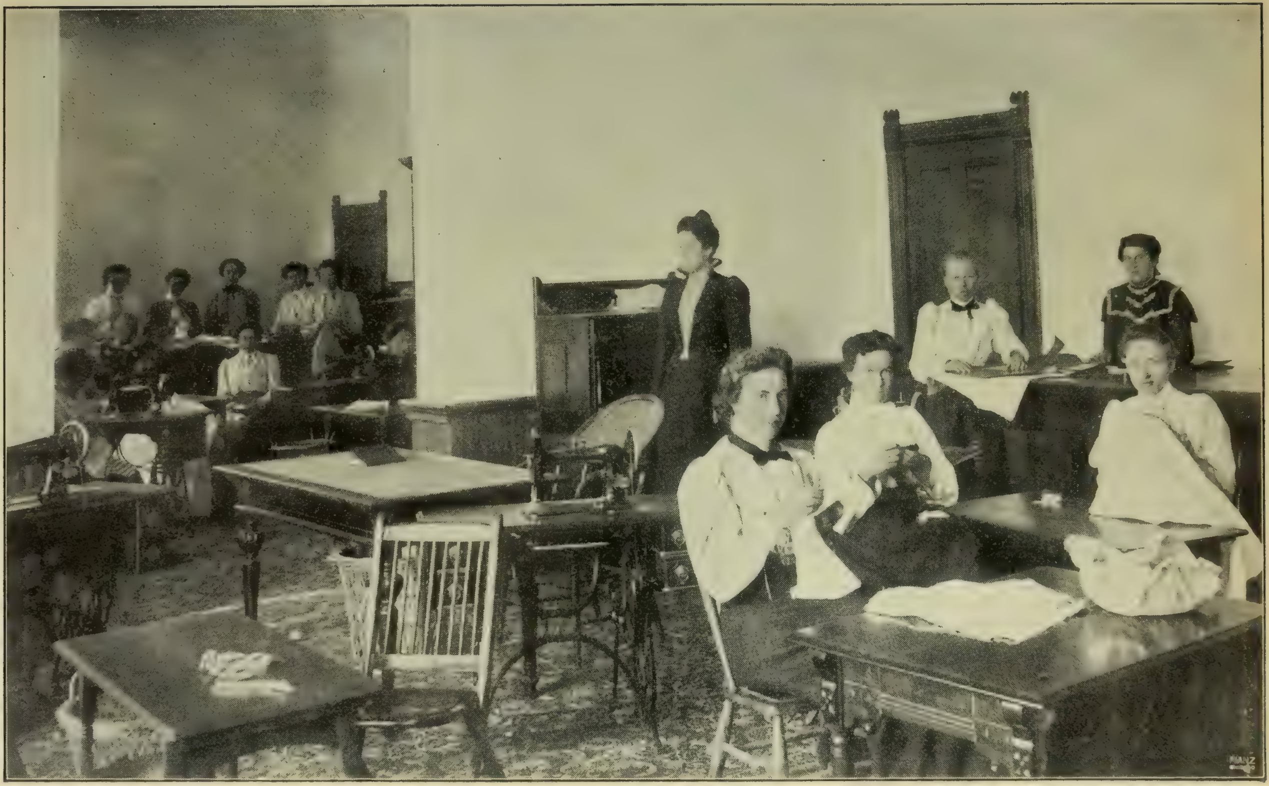
SECTION OF ENGLISH LIBRARY.

THE WABASH RAILROAD

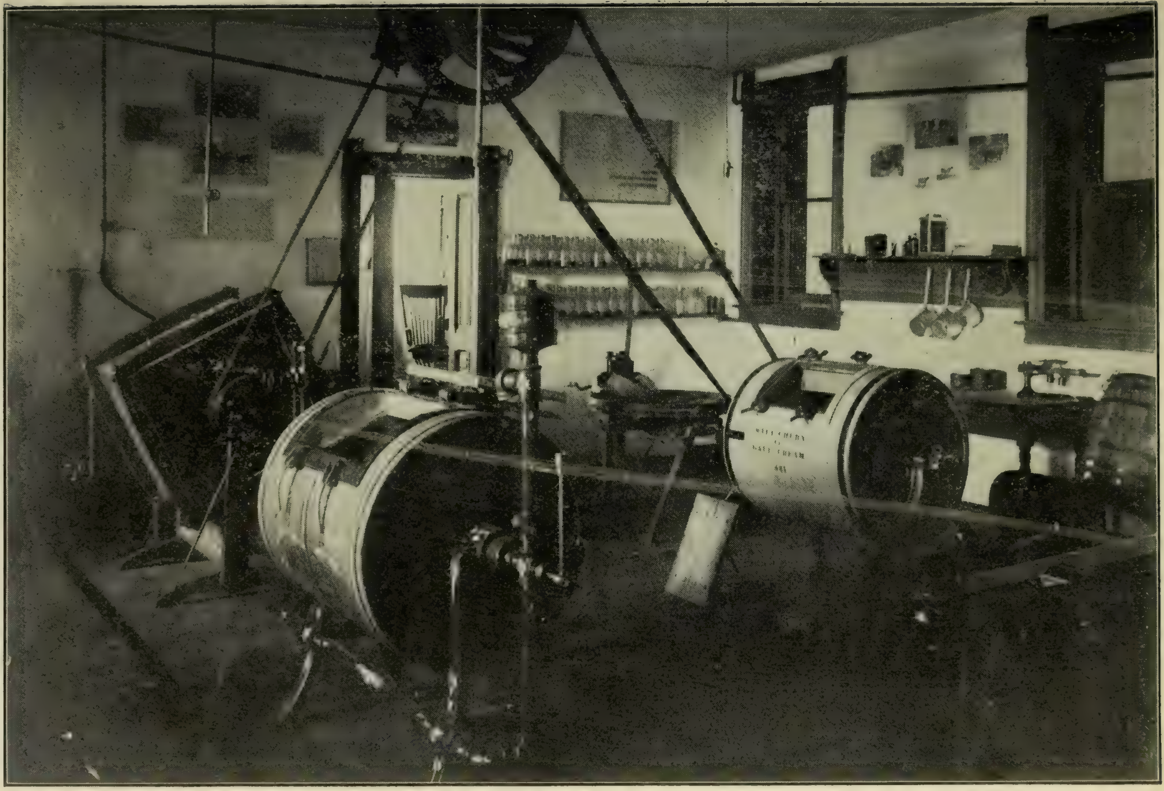
VIEW IN COMMERCIAL ROOMS.

TYPEWRITING AND STENOGRAPHY.

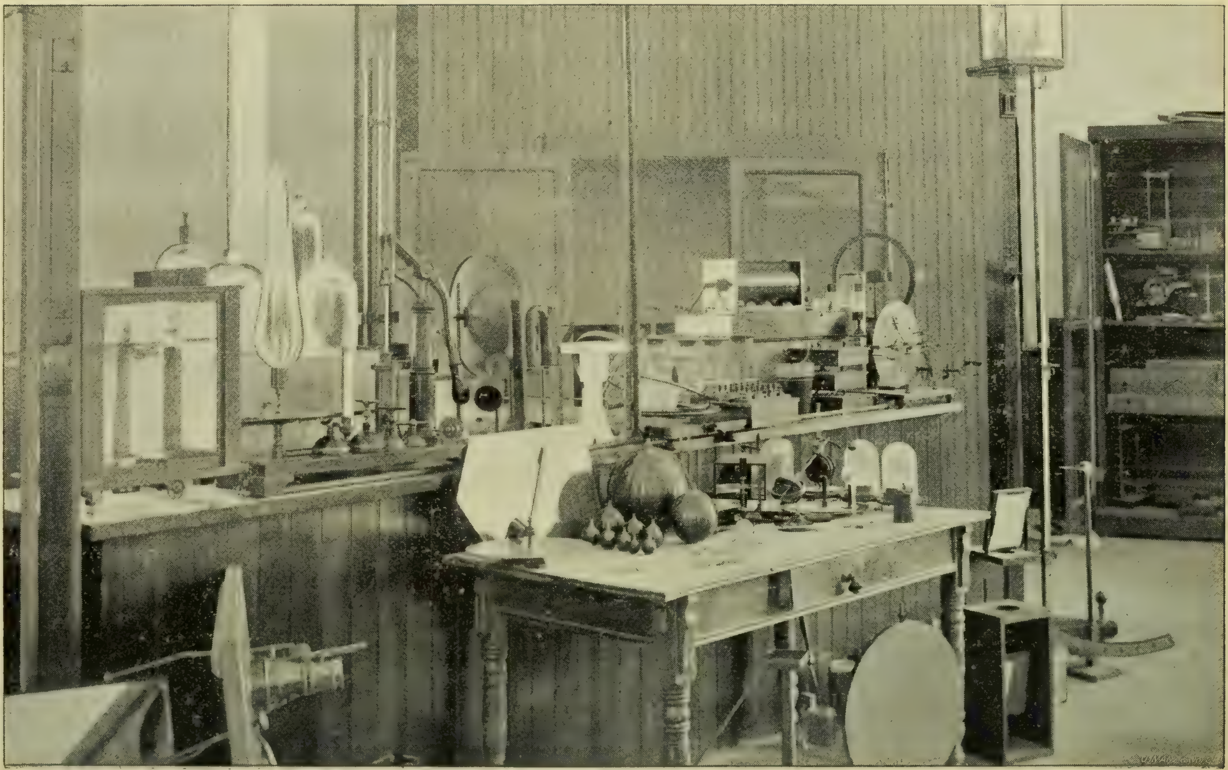


VIEW IN SEWING ROOMS.

KITCHEN.

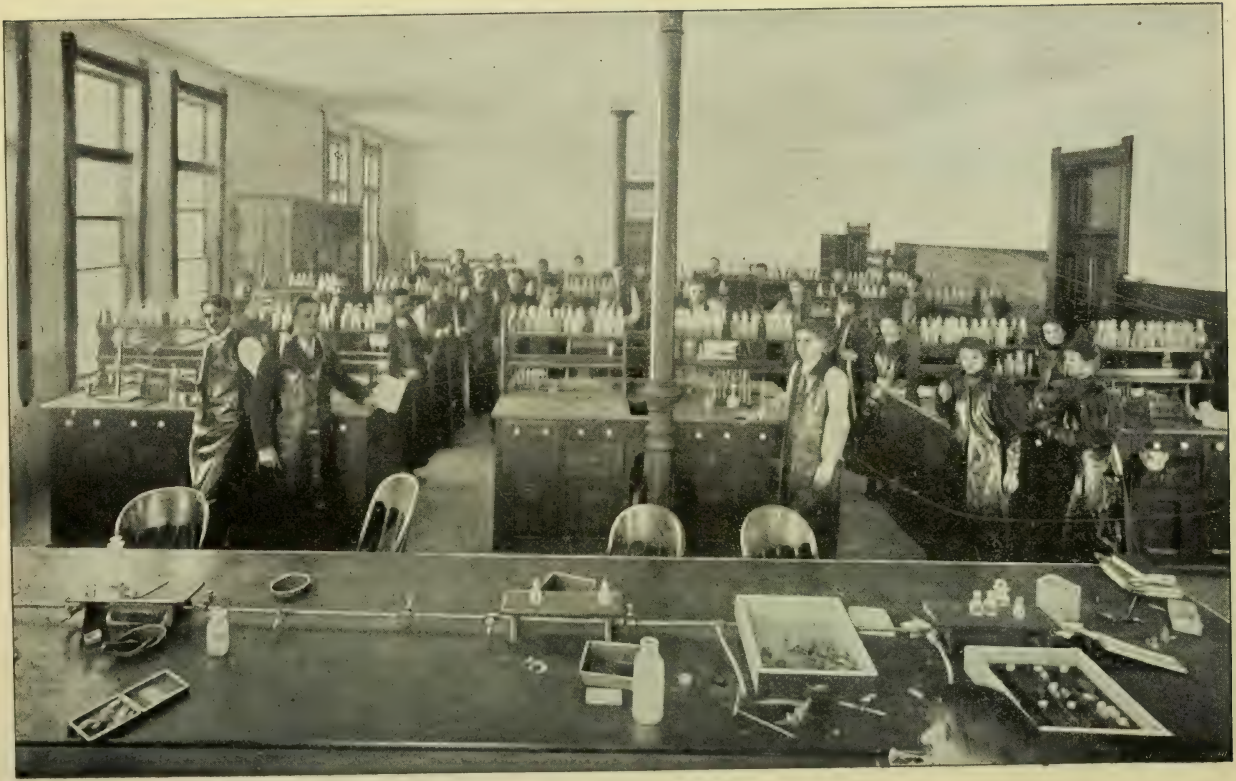


DAIRY.



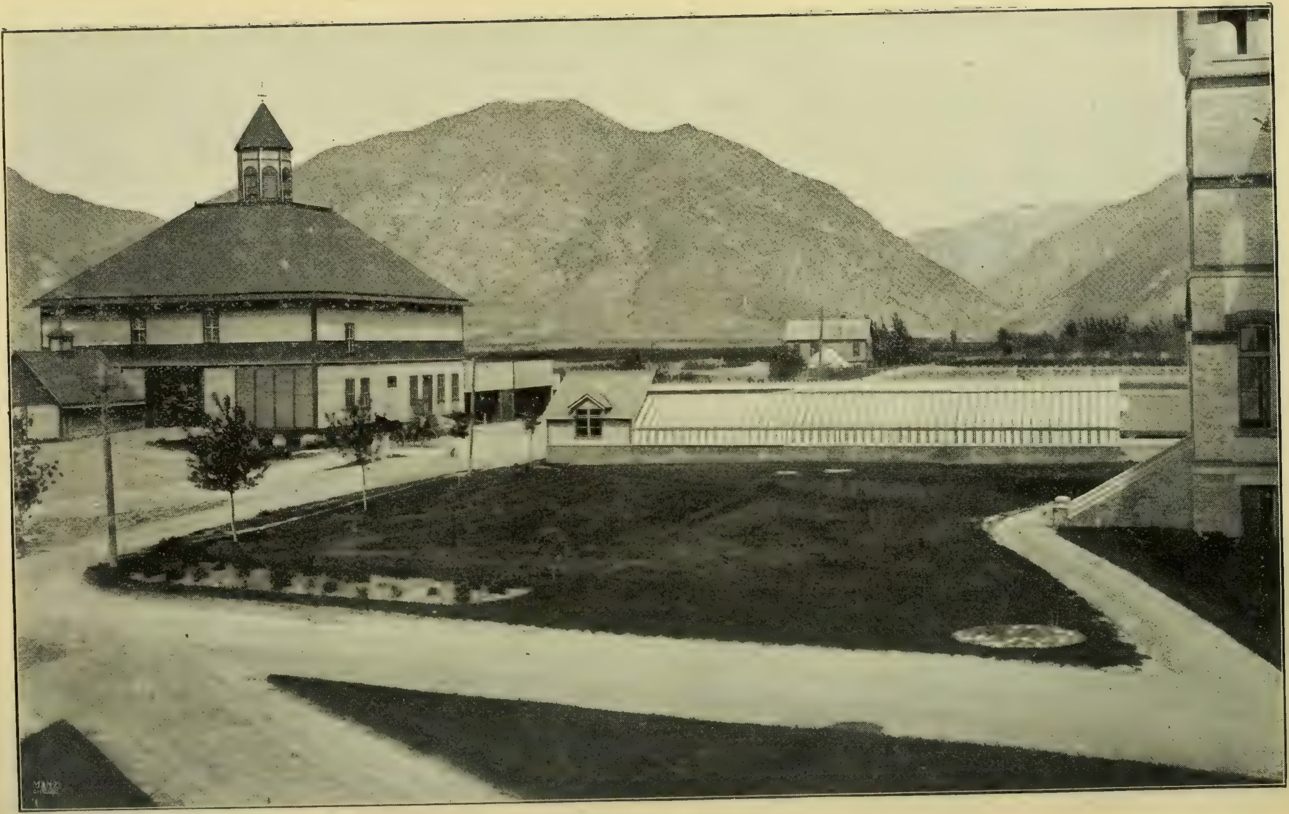
PHYSICAL APPARATUS.

EXPERIMENT STATION CHEMICAL LABORATORY.



CHEMICAL LABORATORY.

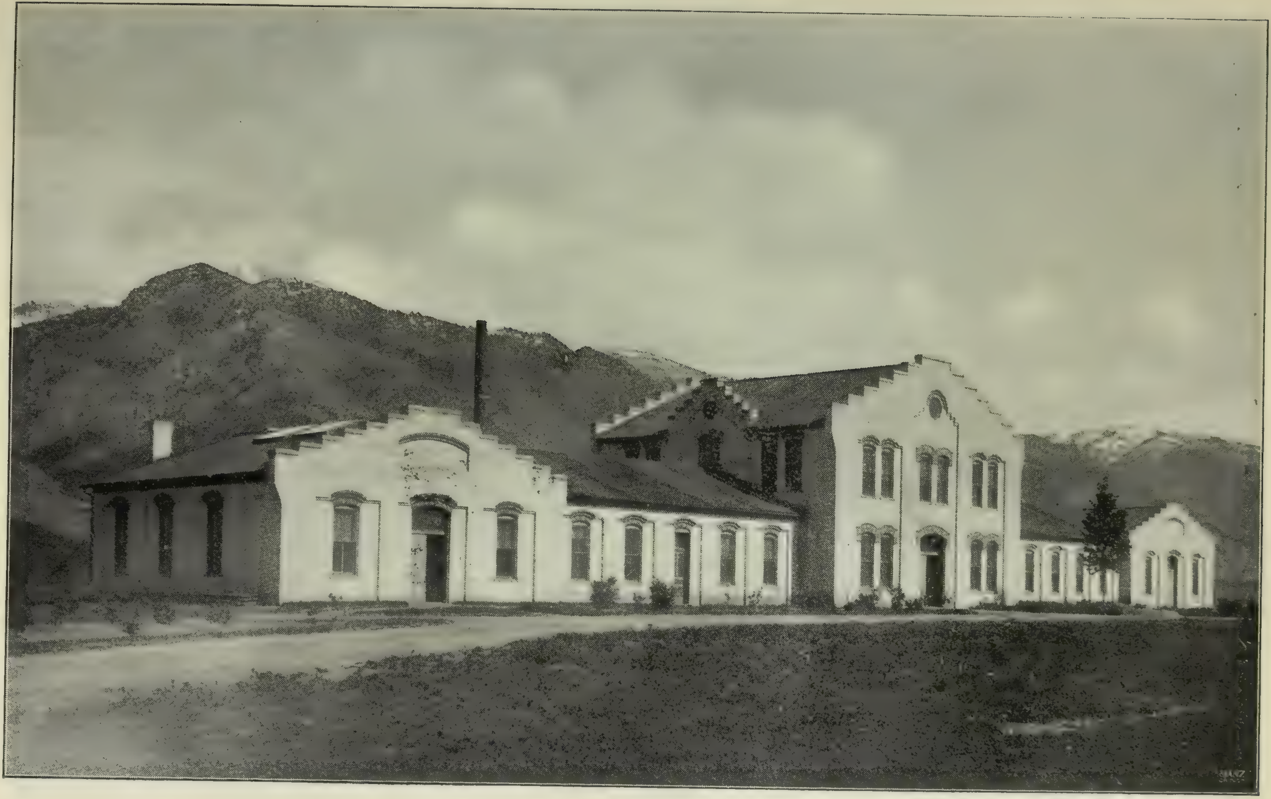
CLASS IN CIVIL ENGINEERING.



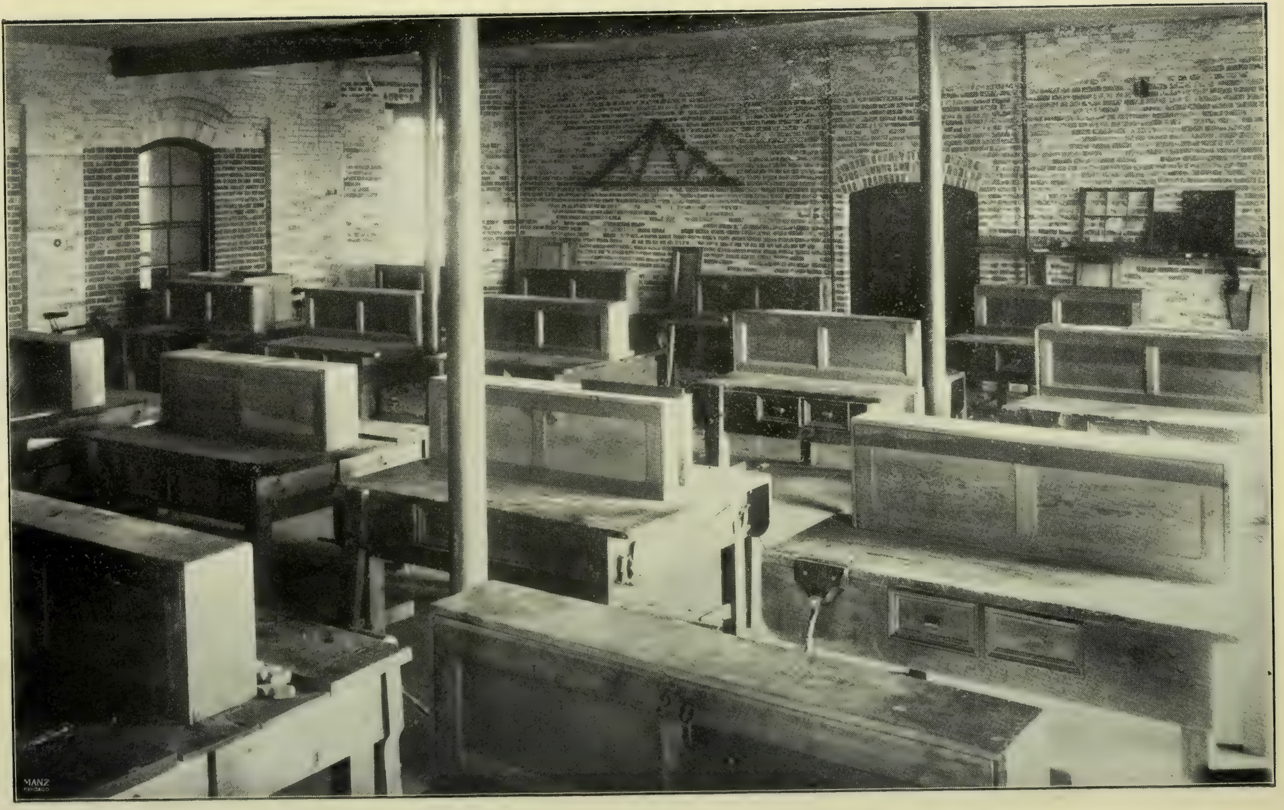
BARN, CONSERVATORY, VETERINARY HOSPITAL.

A CORNER IN THE PALMS HOUSE.

GENERAL VIEW IN CONSERVATORY.



MECHANIC ARTS BUILDING.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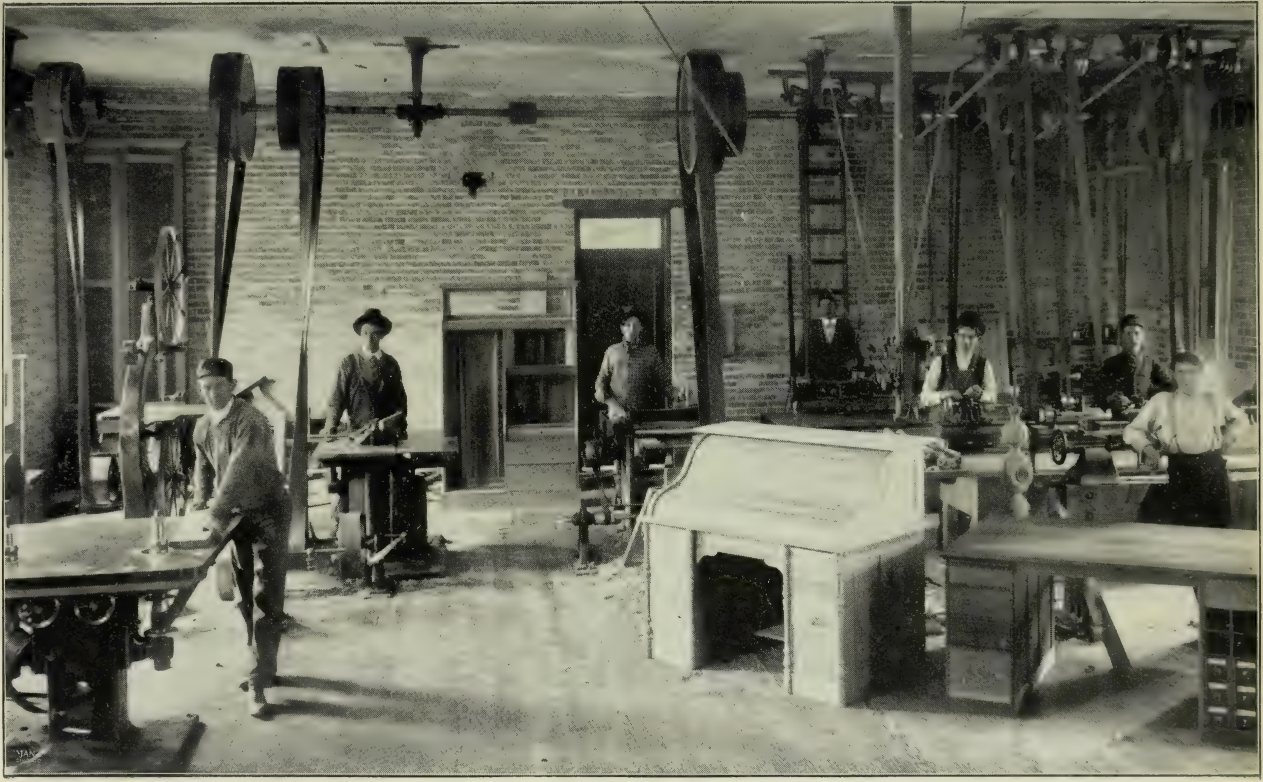
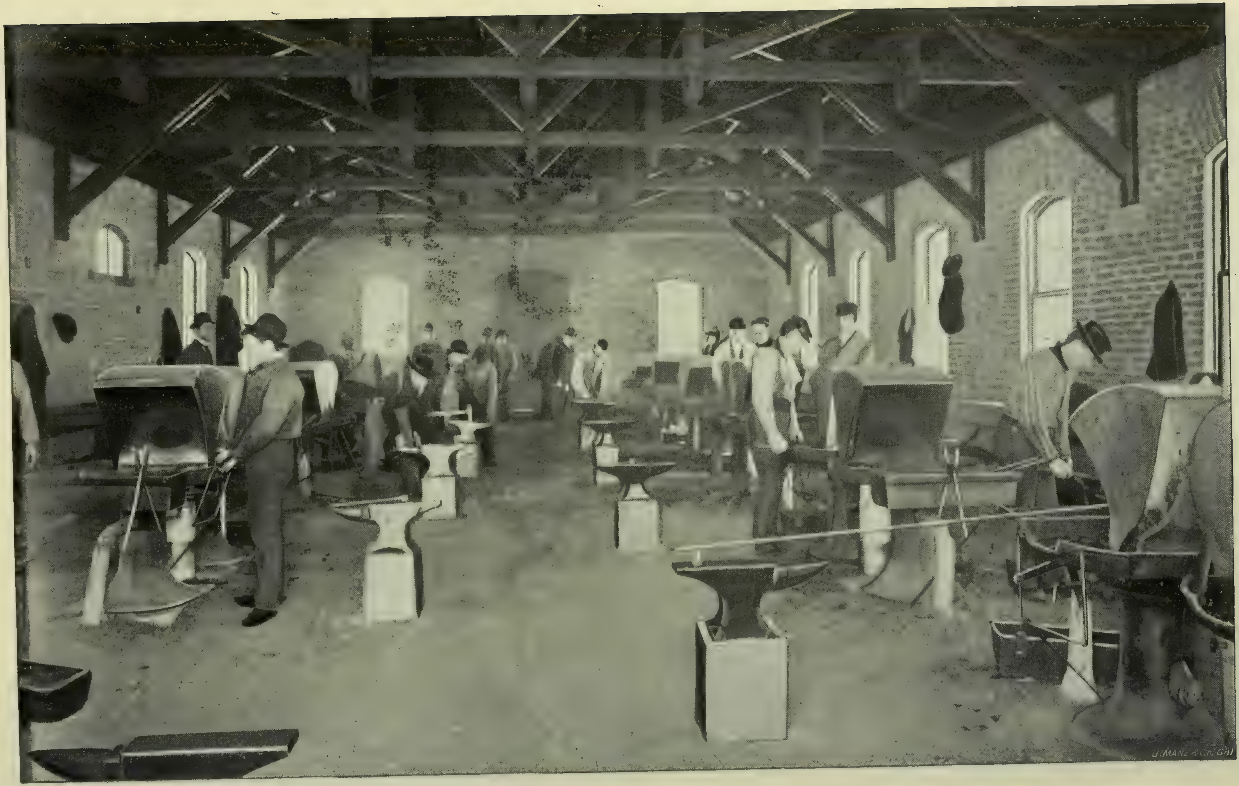


WOOD-WORKING MACHINE ROOM.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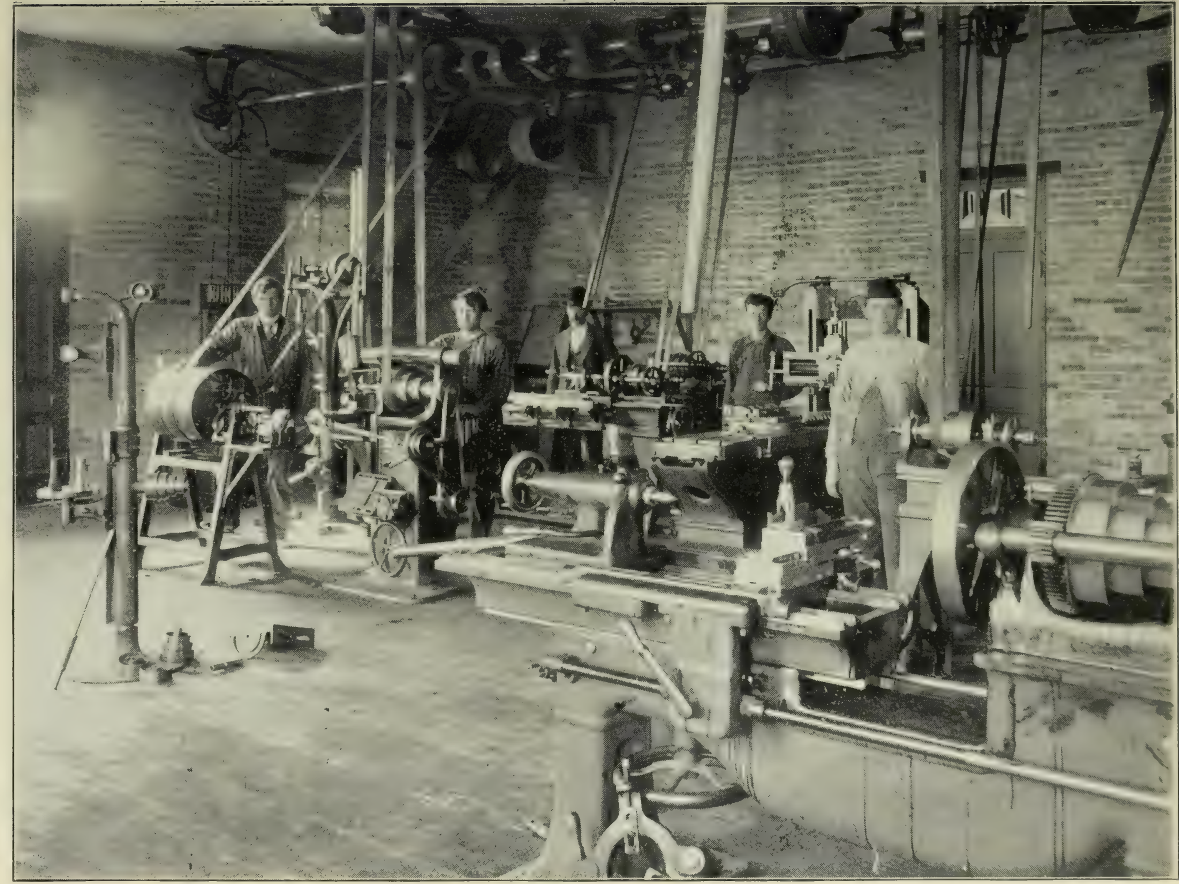
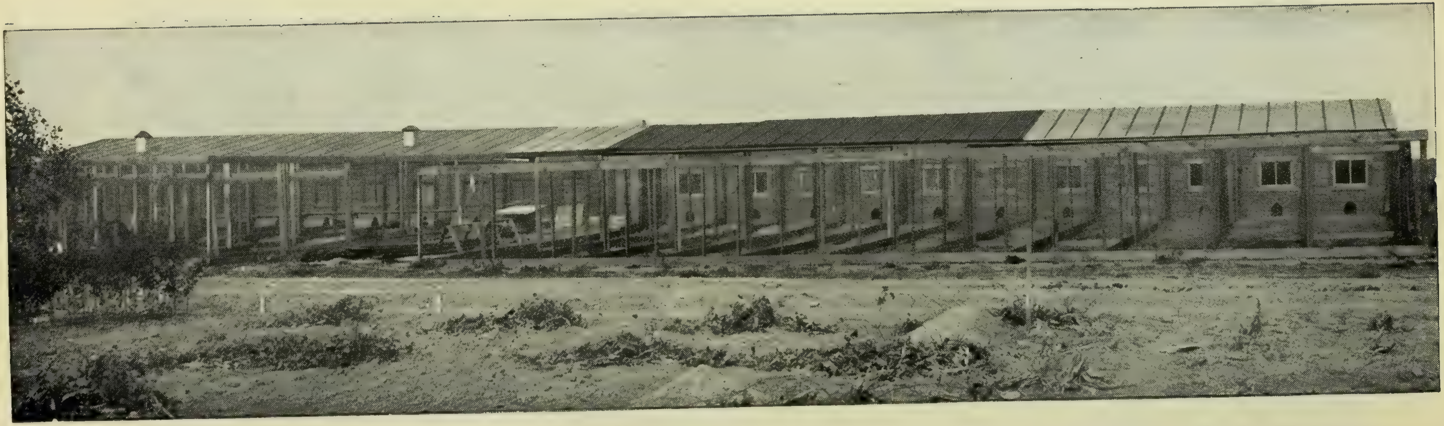
FORGE ROOM.



IRON-WORKING MACHINE ROOM.



POULTRY HOUSE.

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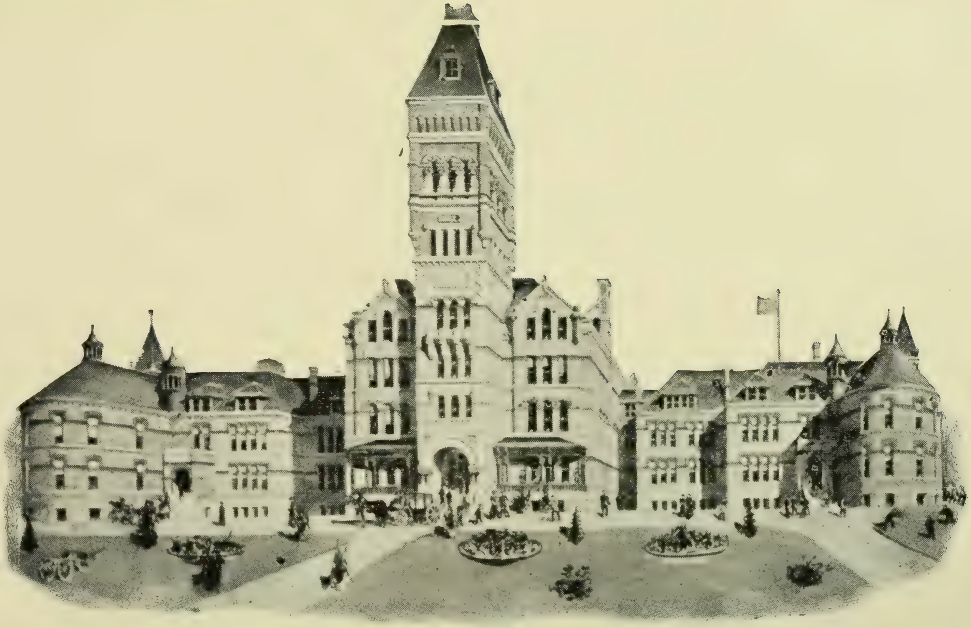

Agricultural College of Utah—Main Building.

CATALOGUE

OF THE

AGRICULTURAL COLLEGE

OF UTAH,

FOR

1901-1902.

With List of Students for 1900-1901.

LOGAN, UTAH.

Published by the College.
July, 1901.

Calendar, 1901-1902.

1901

January

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COLLEGE CALENDAR, 1901-1902.

FIRST TERM.

1901.

September 17, 18, Tuesday and Wednesday:	Entrance examinations. Registration of former students, and new students who are admitted on certificate.
September 19, Thursday:	Instruction begins.
November 28, Thursday:	Thanksgiving recess.
December 20, Friday:	Holiday recess begins.

1902.

January 7, Tuesday:	Instruction resumed.
February 8, Saturday:	First term ends.

SECOND TERM.

February 11, Tuesday:	Second term begins.
February 22, Saturday:	Washington's Birthday.
April 15, Tuesday:	Arbor Day.
May 30, Friday:	Decoration Day.
June 15, Sunday:	Baccalaureate sermon.
June 16, Monday:	Class Day.
June 17, Tuesday:	Commencement. Alumni Reunion.
June 18, Wednesday:	Summer vacation begins.

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SECRETARY OF THE FACULTY.

Professor of English Language and Literature.

FREDERICK B. LINFIELD, B. S. A.,

Professor of Animal Industry.

JOHN A. WIDTSOE, M. A., Ph. D.,

DIRECTOR OF THE EXPERIMENT STATION.

Professor of Chemistry.

DALINDA COTEY, B. S.,

Professor of Domestic Science.

* JOSEPH JENSON,

DIRECTOR OF WORK SHOPS.

Professor of Mechanical Engineering.

JOHN W. FARIS,

Professor of Commerce.

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*On leave of absence.

GEORGE L. SWENDSEN, B. S.,
Professor of Civil Engineering.

CLARENCE SNOW, B. S.,
Professor of Physics.

CHARLES P. CLOSE, M. S.,
Professor of Botany, Horticulture, and Entomology.

EPHRAIM GOWANS GOWANS, B. S., M. D.,
CURATOR OF THE MUSEUM.
Professor of Animal Biology.

JOHN FRANKLIN ENGLE, A. M., Ph. D.,
Professor of History and Civics.

KARL R. MOENCH, Ph. D.,
Professor of Modern Languages.

JAMES DRYDEN,
Assistant Professor of Meteorology and Animal Industry.

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Assistant Professor of Mathematics and Astronomy.

LEWIS A. MERRILL, B. S.,
Assistant Professor of Agronomy and Veterinary Science.

EDWARD W. ROBINSON,
Assistant Professor of Commercial Law and Geography.

PETER A. YODER, M. A., Ph. D.,
Assistant Professor of Chemistry.

JOHN T. CAINE, JR., B. S.,
PRINCIPAL OF PREPARATORY DEPARTMENT.
Instructor in English.

SARA GODWIN GOODWIN,
Librarian.

RUTH EVELYN MOENCH,
Instructor in English ond Physical Culture.

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Foreman in Carpentry.

JULIEN P. GRIFFIN,
Foreman in Forging.

JOHN A. CROCKETT,
Instructor in Dairy Husbandry.

WILLIAM PETERSON, B. S.,
Instructor in Geology and Mathematics.

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Instructor in Penmanship.

SAMUEL B. MITTON,
Instructor in Music.

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Instructor in English.

RENA BAKER,
Instructor in English.

ELVIN JENSEN NORTON,
PRESIDENT'S PRIVATE SECRETARY.
Instructor in Stenography and Typewriting.

LYDIA HOLMGREN,
Assistant in Domestic Science.

EDWARD PARLEY PULLEY,
Assistant in Mechanical Engineering.

RHODA B. COOK,
Instructor in Sewing and Millinery.

LOUISE RICHARDS,
Instructor in Drawing.

WALTER W. McLAUGHLIN, B. S.,
Assistant in Chemistry.

WM. D. BEERS, B. S.,
Assistant in Civil Engineering.

STANDING COMMITTEES OF THE FACULTY.

1901-1902.

The President of the College is ex-officio a member of all standing committees.

1. *Agriculture.*—Professors Linfield, Close, Widtsoe, Gowans, Swendsen, Merrill, Dryden.

2. *Domestic Science.* — Professors Cotey, Linfield, Moench, Yoder, Mrs. Cook.

3. *Commerce.* — Professors Faris, Engle, Robinson, Mr. Norton.

4. *Engineering.* — Professors Swendsen, Jenson, Snow, Langton.

5. *General Science.*—Professors Widtsoe, MacEwan, Snow, Langton, Moench.

6. *Manual Training.* — Professors Jenson, Snow, Cotey, Mrs. Cook.

7. *Preparatory.*—Principal Caine, Mr. Peterson, Miss Baker.

8. *Farmers' Institute.*—Professors Widtsoe, Linfield, Swendsen, Close, Merrill.

9. *Military Department and Gymnasium.* — Professors Close, Caine, Merrill, Miss Moench, Lieut. ———.

10. *Scholarship and Graduation.*—Professors Snow, MacEwan, Swendsen, Langton.

11. *College Publications.* — Professors MacEwan, Faris, Dryden, Caine, Mr. Hill.

12. *Students' Affairs.* — Professors Jenson, Faris, Gowans, Engle, Moench, Robinson, Mr. Peterson, Mrs. Cook, Miss Richards.

13. *Athletics.*—Professors Langton, Swendsen, Snow, Faris, Gowans, Miss Baker, Miss Richards.

14. *Amusements and Public Entertainments.* — Professors Gowans, Engle, Robinson, Mr. Hill, Miss Moench.

15. *Literary Societies.*—Professors Robinson, Engle, Moench, Mr. Peterson, Miss Moench.

16. *Class Organization.*—Professors Engle, Moench, Merrill, Mr. Hill, Miss Baker.

AGRICULTURAL COLLEGE OF UTAH.

General Information.

The Agricultural College of Utah constitutes part of the public school system of the State. It comprises practically six different schools: the School of Agriculture, the School of Domestic Science, the Commercial School, the School of Engineering, the School of General Science, and the Manual Training School; also the Agricultural Experiment Station, which, while not providing directly for instructional work, is one of the most important departments of the institution. The character and extent of the work offered by the College are shown, as far as the limits of space will allow, in the following descriptive statements and schedules.

FOUNDATION AND ENDOWMENT.

An Act of Congress, approved July 2, 1862, provided that public lands should be granted to the several states, to the amount of "thirty thousand acres for each Senator and Representative in Congress," from the sale of which there should be established a perpetual fund, "the interest of which shall be inviolably appropriated, by each state which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The Act forbids the use of any portion of the aforesaid fund, or of the interest thereon, for the purchase, erection, or maintenance of any building or buildings. The states accepting the provisions of the Act are required to provide for the construction and maintenance of the necessary buildings and for the expenses of administration in carrying out the purposes of the Act.

On March 8, 1888, the Utah Legislative Assembly accepted the national law, and in accordance with its provisions founded the Agricultural College of Utah. The amount of public lands granted to this institution, under the provisions of the Act of Congress, was 90,000 acres; but by the terms of the Enabling Act, passed by Congress and approved July 16, 1894, providing for the admission of Utah as a state, the amount was increased to 200,000 acres.

Under an Act of Congress, approved March 2, 1887, the College receives $15,000 annually for the maintenance of the Experiment Station, "to aid in acquiring and diffusing among the people useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

Under an Act of Congress, approved August 30, 1890, the College receives $25,000 annually, "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their application to the industries of life."

In addition to the income from the national government and from the land grant fund, the College is dependent upon the State Legislature for such appropriations as are needed to meet the requirements of the several departments in accordance with the provisions of the Acts of Congress, and to provide for the further development of the institution consistent with the educational and industrial demands of the state.

HISTORY.

In 1888, the legislature appropriated $25,000 for buildings, and the county of Cache and the city of Logan gave one hundred acres of land on which to locate the College. Plans were prepared for the main College building, and part of the south wing was completed. In January, 1890, the institution was first opened for the admission of students. Regular courses were offered in agriculture, domestic arts, civil engineering, mechanic arts, and commerce; also a preparatory course, and special courses in agriculture, mining engineering, and irrigation engineering.

The legislature of 1890 appropriated $48,000 for the construction of an Experiment Station building, two laborers' cottages, and a farm house, and for the purchase of apparatus and the employment of administrative officers. The legislature of 1892 provided $108,000 with which the south wing, the north wing, and part of the center of the main College building were completed; rooms in the basement were provided with machinery and other facilities for shopwork; the scientific laboratories were more thoroughly equipped; and other additions were made which added greatly to the facilities of the institution for advanced work. In 1894, additional apparatus was provided, and a forcing house and a veterinary laboratory were constructed. In 1896, part of the Mechanic Arts Building was completed and the forge shops were removed from the Main Building. In 1897, the legislature made an appropriation for the maintenance of a Manual Training School, and for the extension of the Mechanic Arts Building, providing rooms for the chemical laboratories and the carpentry and machine shops; manual training courses were established in mechanic arts and domestic arts. In 1899, a greenhouse was constructed and equipped. In 1900, a department of art was established, additional class rooms were furnished, the several departments throughout the institution were more thoroughly organized, and other improvements were made, adding to the facilities for thorough and efficient work. The legislature of 1901 appropriated $108,200 for general maintenance and various improvements, including the completion of the front of the Main Building, the construction of model farm buildings, a vegetation house and additional land for work in irrigation investigations, and additional apparatus.

POLICY.

It is the policy of the Agricultural College of Utah, in accordance with the spirit of the law under which it is organized, to provide a liberal, thorough, and practical education. The two extremes in education, empiricism and the purely theoretical, are avoided, the practical being based upon, and united with, the thoroughly scientific. All the practical work, on the farm, in the orchards, vineyard, gardens, dairy, commercial rooms, kitchen, sewing rooms, different scientific laboratories, and carpenter, forge, and machine shops, is done in strict accordance with scientific principles. In addition to the practical work of the different courses, students are thoroughly trained in the related subjects of science, and in mathematics, history, English, and modern languages. While the importance of practical training is emphasized, the disciplinary value of education is kept constantly in view. It is recognized that the mind and eye and hand must together be trained in order to secure symmetrical development. The object is to inculcate habits of industry and thrift, of accuracy and reliability; and to foster all that makes for right living and good citizenship.

LOCATION.

The Agricultural College is located in Logan, Utah, the county seat of Cache County, which is one of the most prosperous agricultural counties in the state. The city has a population of about 6,000; it is noted for its freedom from vice, is quiet, orderly, clean, and generally attractive, with neat homes, good substantial public buildings, electric lights, and water system; the citizens are thrifty and progressive. The College is beautifully situated on a broad hill overlooking the city one mile east of main street, and commands a view of the entire valley and of its surrounding mountain ranges. The beauty of the location is perhaps unsurpassed by that of any other college in the country. A few hundred yards to the south is the Logan river, with its clear water and luxuriant grasses and shrubs. A mile to the east is a magnificent mountain range and a picturesque canyon. In other directions the towns and farms covering the green surface of Cache Valley, and seen through the clear atmosphere, constitute a delightful and impressive panorama. The valley is a fertile, slightly uneven plain, 4,500 feet above sea level, about twelve by sixty miles in dimensions, almost entirely under cultivation, completely surrounded by the Wasatch mountains, and one of the most beautiful and healthful valleys in the western region.

BUILDINGS AND GROUNDS.

The College buildings comprise the Main Building, the Experiment Station Building, the Mechanic Arts Building, the Dormitory, the Conservatory, the Veterinary Laboratory, the Forcing House, three barns, the Poultry Building, and residences for the President of the College, the Director of the Experiment Station, and the Farm Superintendent, and cottages for farm laborers.

THE MAIN BUILDING is constructed of brick and stone. It is 360 feet long, nearly 200 feet deep in the central part, and four stories in height. It is heated by steam and lighted by electricity in every part. The rooms are light and pleasant and the halls spacious, extending on each floor the entire length of the building. This building contains the large auditorium, with a seating capacity of about 1500; a small auditorium, or society hall, which will seat 400; the administrative offices; the library and reading rooms; the general museum; the gymnasium; the biological, the botanical, and the physical laboratories and lecture rooms; the office and class rooms of the commercial department; the sewing and millinery rooms, the laundry, kitchen, and dining rooms, and the offices of the department of domestic science; the dairy rooms; the offices and class rooms of the deparment of civil engineering; and the class rooms for English, mathematics, and modern languages.

THE EXPERIMENT STATION BUILDING is a brick structure, 45 feet long and 35 feet wide, two stories in height. It contains the laboratories of the Entomologist and the Horticulturist; the offices of the Director of the Station, the Agronomist, the Horticulturist, and the Poultry Manager; the library of the Professor of English; the mailing room; and a dark room for photographic work.

THE MECHANIC ARTS BUILDING, situated south of the Main Building, is 220 feet long by 40 feet wide, with the central part, 40 feet wide, extending back 120 feet. It is one story high, except the central front part, which is two stories. The walls are of brick and the roof of corrugated iron. The building is heated by steam, and is well lighted and ventilated throughout. It contains the Station and College chemical laboratories, the power room, the forge room, the carpentry or bench room, the machine shops for wood and metal, and the office and class rooms of the director of manual training.

Adjoining the Mechanic Arts Building is a *store room*, 40 by 27 feet, two stories high.

THE DORMITORY is a brick and stone structure, 50 feet wide by 80 feet long, four stories in height. It contains thirty-three rooms for students, each 12 by 14 feet exclusive of closet; a reception room for students, 19 by 27 feet; a model kitchen; a dining room; a pantry, supplied with all modern conveniences; a laundry room; bath rooms; and rooms for the matron and for the employees. The rooms of this building are well lighted and ventilated, each room having two registers for ventilation.

THE CONSERVATORY is of the most modern type, 90 by 25 feet, and is filled with beautiful flowering and ornamental plants. There are three compartments of equal size, one for semi-tropical plants, such as ferns, palms bananas, etc., one for roses, and one for carnations and other plants. The equipment is used to supplement class work in botany, floriculture, and horticulture.

THE VETERINARY LABORATORY BUILDING, situated several hundred yards to the rear and east of the main College building, is a stone and frame structure, 18 feet wide and 42 feet long, two stories in height. It contains a dispensary, an operating room, stalls, etc. It is heated by steam.

THE FORCING HOUSE, adjoining the Veterinary Laboratory Building, is 16 feet wide by 25 feet long. Experimental work in growing vegetables is conducted here during the winter.

THE BARNS. There are three barns, one for horses, one for cattle, and one for sheep. *The Horse Barn* is a wooden structure, 60 feet square, and contains model sanitary stables for horses, besides storage divisions for hay, grain, and seeds, and rooms for carriages and wagons, farm implements, and machinery; also the farm foreman's room and repair shop. A ten-horse power electric moter furnishes power for grain threshing, feed grinding, and fodder shredding. *The Cattle Barn* is 106 feet by 104 feet. It is provided with the most modern equipment througout, including iron stalls, cement floors and mangers, etc. There are accommodations for seventy-five head of cattle; also hospital rooms, feed rooms, a milk room, a root cellar, and storage room for hay and grain. *The Sheep Barn* is a modern building, 94 feet by 41 feet in extreme dimensions, with accommodations for seventy-five sheep, and storage room for feed.

THE POULTRY BUILDING is 130 feet long and 10 feet wide, divided for experimental purposes into twenty-two pens. This building is provided with a hot water heating system for winter, also a boiler for cooking food, and an incubator cellar. There are four different makes of incubators and brooders, a bone mill, clover cutter, and other necessary appliances of a modern poultry plant. The principal breeds of poultry are kept, representing the American, Mediterranean, and Asiatic classes.

The land occupied by the College and its several departments embraces about 105 acres. Of this, twenty acres constitute the CAMPUS, which is tastefully laid out and adorned with flower-beds, and individual specimens and groups of ornamental shrubs and trees, both evergreen and deciduous. There are broad stretches of lawn, and wide drives and walks leading gracefully from various parts of the Campus to the College buildings. During the summer the conservatory contributes its hardy plants for lawn decoration.

Adjoining the Campus on the southeast, near the main College building, is the ATHLETIC FIELD of about four acres, used for base ball, foot ball, and other athletic sports.

The FARM comprises 65 acres; the ORCHARDS, the VINEYARDS, and the small fruit and vegetable GARDENS, nine acres; and the FORESTRY, seven.

All parts of the College grounds are used by the professors in charge of instruction in Agriculture and Horticulture for the purpose of practical illustration in their respective departments; they are also used for the work of the Experiment Station.

EQUIPMENT.

The DEPARTMENT OF AGRONOMY is provided with a large collection of agricultural plants and seeds, and other illustrative material. During the year a *soil-physics laboratory* will be equipped with balances, a soil compacting machine, apparatus for determining the water holding capacity of soils, specific gravity of soils, etc. The College farm is equipped with the best farming implements and machinery, including plows, cultivators, planters, cutters, shellers, grinders, a binder, a threshing machine, an electric motor, etc. For illustrative and experimental purposes, the farm is divided into 385 plats on which different classes and varieties of farm crops are grown.

For the work in ANIMAL INDUSTRY, general use is made of the College barns, live stock, dairy, etc. The live stock consists of Clydesdale and Shire draft horses; Hereford, Short Horn, Holstein, and Jersey cattle; Shropshire, Cotswold, and Merino sheep; and Berkshire, Poland China, and Chester White hogs. A live stock class room is provided where the animals may be brought before the class for inspection and criticism. The *Dairy* occupies a floor space of about three thousand square feet, which is divided into seven rooms for the various processes of dairy work. The department is equipped with the apparatus necessary for all the processes of butter and cheese making and milk testing. For butter making there are milk vats and heaters, hand and power separators, hand and power churns, a combined churn and worker, and a Mason butter worker. For cheese making there are four vats, gang and upright presses, and a curing room. Ample facilities are provided for illustrating the handling of milk for the milk trade, including the Star milk cooler, an intermittent pasteurizer, etc. The *milk testing laboratory* is as well equipped as any similar laboratory in the country. There are two steam and two hand Babcock testers, and nearly every type of Babcock test apparatus and glassware. There is also apparatus for testing the acidity of milk or cream and a delicate balance, used in testing cheese and butter. The department has an eight-horse power boiler and a six-horse power engine, and model cold storage rooms for butter and cheese. The model poultry house and equipment afford special facilities for illustrative and practical experimental work with poultry.

The BOTANICAL LABORATORY has a good supply of apparatus with which to do systematic and microscopic work. The herbarium contains 3,000 mounted and named specimens to which the students have access at all times. There are 700 samples of economic seeds for use in economic botany. The general equipment includes a compound microscope for each student's use; 15 Bausch and Lomb dissecting microscopes; microtome; hand section cutters; stains; slides; and everything necessary for successful botanical work. The orchard, with over 300 varieties of apples, pears, peaches, plums, apricots, and cherries; the vinyards, with 60 varieties of grapes, including the hardy and tender, or California, kind; the forestry experiment, containing many kinds of hardy trees and shrubs; and the small fruit and vegetable gardens, are all used in connection with the work in botany and horticulture for practical illustrative purposes.

The VETERINARY LABORATORY is supplied with surgical instruments, a modern operating table, an operating room, box stalls for patients, the necessary medicine, etc. Among the more important surgical instruments are a complete set of dental instruments, mouth speculum, tracheal and roaring instruments, neurotomy set, thermo-cautery, castrating and spaying instruments, obstetrical and parturition instruments, postmortem and diagnostic instruments, and other material found in a well equipped hospital. In this laboratory the agricultural students have practice and observation in the treatment of animals.

The DOMESTIC SCIENCE DEPARTMENT is provided with a model kitchen and all accessories; a dining room; offices; and sewing and millinery rooms, with the necessary machines, etc., required for thorough and practical work.

The equipment of the COMMERCIAL DEPARTMENT consists of hard wood counting-room desks, arranged in such a way that the students may either stand or sit while working; a complete set of modern banking furniture, permanent blank books, letter files, rubber stamps, copying press, college currency, etc. In connection with the bank there are completely furnished wholesale, freight, real estate, and insurance offices. The typewriting and stenographic rooms contain fourteen machines—seven Remington, five Smith Premier, and two Underwood—each provided with regular typewriting desks; also tables for practice in stenography.

The CIVIL ENGINEERING DEPARTMENT is well equipped with instruments and apparatus for field practice in all the courses offered by the department. For the work in surveying there are two first class transits, two levels, a Johnson plane table, a planimeter, a clinometer, and other supplementary instruments, together with a full supply of chains, tapes, etc. For the work in hydraulics, the equipment includes a number of water meters of different kinds, a hook guage, water registers, etc. The excellent equipment on the experiment farm in the shape of measuring apparatus, and the many canals, rivers, and power plants in the immediate vicinity, afford excellent opportunity for very thorough training in hydraulic work. The drawing room is equipped with modern drawing desks and such other accessories as are needed for the office work. In the library are to be found a number of standard reference books in the various lines of engineering, and the standard professional periodicals are also available to the students.

The MECHANICAL ENGINEERING and MECHANIC ARTS departments are well equipped for all of the courses offered. The bench room is provided with forty-five carpenters' benches with full equipment of tools. In the forge room are twenty-four power-blast forges, with anvils and complete tool equipments; also hand-drills, cutting-off machines, tire upsetter, special swageblocks, etc. The wood-working machine room is supplied with nine ordinary turning lathes, one large turning lathe, one jig-saw, one universal saw-table, one wood-planer, one new two-spindle shaper and moulder, one band saw, one power mortiser and borer. In the iron-working machine room there are three large engine lathes, one speed lathe, one large drill press, one sensitive drill (made by students), one large iron planer, one universal milling machine, emery wheels, vises, and tool cutters of various kinds. For experimental work in power measurement a ten-horse power Flather hydraulic dynamometer is used.

The BIOLOGICAL LABORATORIES are located on the second floor with east and north exposures. They are well equipped for experimental work in the various courses in which the department offers instruction. The equipment includes, high-power Leitz and Bausch and Lomb microscopes; dissecting microscopes; condensers; microtome; freezing apparatus; micrometers; micro-spectroscope; photo-micrographic camera; Thoma-Zeiss; hæmacytometer; hot air and steam sterilizers; incubator; refrigerators; paper and plaster manikins; a series of plaster models (human); analytical balance; a varied collection of microscopic slides; a well selected stock of microscopic glassware; utensils, dissecting instruments, media, and reagents.

THE CHEMICAL LABORATORIES occupy, temporarily, the north part of the Mechanic Arts Building. They are well equipped for elementary and advanced work in chemistry. In the College laboratories especial provision is made for the elementary study of the science. Individual desks, fitted with drawers and cupboards, and a very complete assortment of chemical glassware and chemicals, render the work in the laboratories easy and pleasant. There are also several valuable collections of gums, oils, coloring matters, foods, etc., that are important aids to the students in this department. The laboratories of the Experiment Station are excellently well equipped for advanced work. The extensive collection of apparatus includes, among other things, balances; silver calorimeter; half-shade polariscope; several sets of hydrometers; thermometers; spectroscope; vacuum pan; filter press; apparatus for gas and microchemical analysis; a large supply of platinum ware; several models of elutriators; a very complete set of apparatus for food and fodder analysis; stirring apparatus; steam and hot air drying ovens; microscopes; apparatus for soil analysis; and a large supply of Jena glassware, and chemically pure reagents. The laboratories are fitted with water, gas, hoods and all other conveniences.

The MINERALOGICAL LABORATORY and the Assaying Room are located in the basement of the main College building. They are equipped for the regular college courses in mineralogy and assaying. The equipment consists of a collection of the more common minerals, for students' use; two fine sets of crystal models; a full supply of apparatus and reagents required in blowpipe analysis; several assay furnaces; rock crusher; grinding table; mortars; sieves; scorifier and cupel moulds; tongs; crucibles; chemicals; and the other necessary apparatus for the successful study of mineralogy and assaying.

THE PHYSICAL LABORATORY occupies a suite of three rooms on the second floor, which are used for class purposes and for elementary laboratory work; and a room on the ground floor, used for electrical and magnetic measurements. The equipment is fairly complete, consisting of all the necessary pieces of apparatus for class demonstration; a set of apparatus for elementary laboratory work, sufficient for sixteen students working on the same experiment; and all pieces required for an experimental course in heat and electricity. Some of the more important pieces are balances and weights by Sartorius; platform balances; an Atwood machine, with aluminum friction wheels and electrical attachments; centrifugal apparatus; working models of levers and pulleys; air pumps; thermometers in different scales; barometers; hydrometers; hydraulic press; porte lumiere; telescope; microscope; an assortment of lenses, mirrors, and prisms; spectroscope; sonometer; siren; tuning forks; organ pipes; Chladni's plates; electric static machine; Leyden jars; electroscope; electrophorus; magnetometer; galvanometers of tangent, sine, balastic, astatic, and D'Arsonval types; Wheatstone bridges, both box and wire forms; resistance boxes; standard resistance and standard cell; primary and storage cells of various kinds; Ruhmkorff coils; electric generators and motors; Crooke's tubes and Geissler tubes.

The COLLEGE MUSEUM occupies rooms on the top floor of the Main Building. Each year the Museum is enlarged by the contribution of friends of the College. It is supplied with a large number of specimens illustrative of geology and palæontology, vertebrate and invertebrate zoology, mineralogy; also about four thousand five hundred species of the Rocky Mountain flora, and a large number of the woods of the United States. There is also an extensive collection of grains representing the produce of Utah and other states. A small collection of Indian and Polynesian products and curiosities has been made. Contributions of fossils, ores, animals, relics, or other material of value to the Museum will be highly appreciated. All gifts are labeled and preserved, and the name of the donor is kept on record.

The ART ROOM which, during the past year, has been newly fitted up at considerable expense, contains many valuable casts, most of which are reproductions of the works of the masters, together with many smaller casts suitable for the more simple work in drawing. A few reproductions of the paintings of the masters have been purchased, and the charts to be used in the work in design; also the tables, drawing boards, and cases necessary for the work.

The LIBRARY AND READING ROOMS are on the first floor of the Main Building. The LIBRARY contains over 8,500 bound volumes and 7,500 pamphlets. Additions are made from time to time to meet the requirements of the several departments. The subjects covered are general literature, including poetry and fiction, travel, history, biography, and criticism; political economy; sociology; metaphysics; general science; and such of the special sciences as are included in the courses of the several departments. The Professor of English, whose private library contains about two thousand eight hundred volumes, allows to advanced students in his department the privilege of the use of his library under his direction. Other professors also accord access to their private libraries as occasion may require. The READING ROOMS are open to the students and the general public every college day throughout the year. They are furnished with reading-slopes for current periodicals, and with reading-tables. Ninety of the best literary, scientific, technical and agricultural periodicals are taken by subscription. Through the liberality of the publishers, forty-seven of the Utah newspapers are regularly received; and ninety-four of the best agricultural papers of the country are sent to the library in exchange for the publications of the Experiment Station. These are all placed upon the reading-slopes for the use of readers. The principal dictionaries and encyclopedias, including the Encyclopedia Britannica, American Cyclopedia, Appleton's Cyclopedia of American Biography, Allibone's Dictionary of Authors, Encyclopedic Dictionary, Century Dictionary, are kept in cases in one of the reading rooms within easy access of the readers.

THE AGRICULTURAL EXPERIMENT STATION.

The AGRICULTURAL EXPERIMENT STATION is a department of the College, supported mainly by Congressional appropriations, supplemented by the receipts from the sales of farm products. The Station was created for the special purpose of discovering new truths that may be applied in agriculture, and of making new applications of well established laws. It is, therefore, essentially a department devoted to research; and as such, it does the most advanced work of the College.

The Experiment Station is not, in the ordinary sense, an institution where model farming is carried on. It has a much higher purpose. The practices of the farmer, good and bad alike, are subjected to scientific tests, in order to determine *why* the one is bad and the other good. Acting on the suggestions thus obtained, new lines of investigations are begun, with the hope that truths of great value to the farmer may be discovered.

The Station has for its present object the study of the underlying laws of irrigation. On the farm, in the orchards, gardens, and barns, experiments are going on that, in time, will lead to the establishment of an art of irrigation that will be based on laws developed by scientific methods. Investigations for the purpose of encouraging the horticultural, dairy, and poultry industries, are also in progress.

The Experiment Station has a high educational value. Nearly all the members of the Station Staff are also members of the College Faculty, and the students, therefore, receive directly, and first hand, an account of the methods and results of the work of the Station. On the farm, in the gardens, orchards, barns, and laboratories, the students receive training in the application of scientific truths in the practical affairs of men. The opportunities that the Experiment Station offers for advanced work in several branches of science are of great importance. The methods of science have been carried into the operations of every human occupation; and the more fully scientific methods of accuracy, persistence, and adjustment are understood by a man, the greater, as a rule, will be his success in any walk of life. The scientific method and spirit characterize all the operations of the Station, and none can fail to be benefitted by a study of the experiments that go on at all times of the year.

The Station Staff are always glad to assist the advanced students of the institution in any investigations they may wish to undertake.

COLLEGE SOCIETIES.

The following societies are maintained by the students of the College, and afford opportunity for practice in oratory, debate, and parliamentary procedure: the Sorosis, for ladies; the Civil Engineering, for men; and the Debating, for both sexes.

STUDENTS' EXPENSES.

Tuition is free. All students pay an annual entrance fee of $5. The privileges of the library and museum are free. In the laboratories, workshops, cooking rooms, and in typewriting, students are charged an incidental fee to cover the cost of materials used by them in their exercises. With proper care this expense need not exceed from $2 to $5 per year in each course.

The fee charged for a certificate of graduation is $2.50; the fee charged for a degree is $5. All the students are held responsible for any injury done by them to the College property.

Good board and rooms can be obtained in private houses for from $2.50 to $3.50 per week. By renting rooms and boarding themselves, students are able to reduce the cost of room and board to less than $2 per week.

The College DORMITORY has accommodation for seventy. The second floor is used exclusively for women and the third floor for men, there being no communicating passage between the two. The cost of room and board, including fuel and light, is from $2.75 to $4 a week, according to the kind of room used. Students furnish their own bedding and table napkins; also rug or carpet if desired. For particulars regarding dormitory accommodations, address Mrs. Karl R. Moench, Agricultural College, Logan, Utah.

Admission and Graduation.

CONDITIONS OF ADMISSION.

Candidates for admission to the Preparatory course, and to the Manual Training courses in Domestic Arts and Mechanic Arts, must be at least sixteen years of age; to all other courses, fifteen. Students are admitted to the Preparatory Course and to the Manual Training courses without examination, except such as may be necessary in order to determine the section in which they can work to the best advantage; the classes in these courses being divided into sections which are graded in such a way as to be especially adapted to those who are not prepared to enter any of the more advanced courses.

Graduates of the district schools, and those who have completed the Preparatory Course of the College, are admitted without examination to the Engineering Preparatory Course, and to any of the three year courses in agriculture, domestic science, and commerce. Other applicants for admission to these courses must pass a satisfactory examination in the subjects of the Preparatory Course.*

Students who have completed the Engineering Preparatory Course are admitted without examination to the Civil Engineering Course, the Mechanical Engineering Course, and the General Science Course. They are also admitted without examination to the four year courses in agriculture, domestic science, and commerce, being conditioned in the technical work preceding the freshman year in the course taken.

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*For a description of these subjects, see Preparatory Course.

Students who have completed the first two years of any of the three year courses in agriculture, domestic science, and commerce, are admitted without examination to any of the regular four year courses in agriculture, domestic science, and commerce, respectively. They are also admitted without examination to the Civil Engineering Course, the Mechanical Engineering Course, and the General Science Course, being conditioned in any of the subjects not already completed of the Engineering Prearatory Course.

Those who have completed any of the three year courses are admitted without examination to the sophomore year in the corresponding courses leading to degrees. Students may be transferred from one regular course to another by making up all the technical work not completed of the course to which they are transferred. Students will be allowed to substitute technical work of one course for that of another only by permission of the Faculty.

Other students are admitted to any of the courses leading to degrees, either upon the certificate of accredited schools or upon satisfactory examination in the subjects of the Engineering Preparatory Course. For a description of these subjects, see "Engineering Preparatory Course" and "Departments of Instruction." By permission of the Faculty, students may be allowed upon entrance to substitute work in other courses for Drawing 1, History 2, Carpentry 5, and Forging 4a. Certificates from schools not accredited will be considered as the merits of each case may warrant.

Candidates for admission to advanced standing are required to pass satisfactory examinations in all the work of the preceding years, or to present satisfactory evidence of having completed an equivalent of such work in some other school or college.

SPECIAL STUDENTS.

Persons of mature years who, for satisfactory reasons, desire to pursue a special line of study, may be admitted as special students, provided they give evidence of ability to do the work desired. Special students may be allowed to graduate in any of the courses, on condition that they complete the required work and pass the necessary examinations.

REGISTRATION.

All students register at the beginning of the collegiate year for the work of the whole year. Changes in registration, and credit for work not registered, will be allowed only by special permission of the Faculty.

CLASSIFICATION.

All regular students are classified as first, second,and third year students in Agriculture, Domestic Science, Manual Training in Domestic Arts,or Commerce; or as first and second year students in the Engineering Preparatory Course; or as first, second, third, and fourth year students in the Manual Training Course in Mechanic Arts; or as freshman, sophomore, junior, and senior students in any of the four year courses leading to degrees; according to the lowest year in which they have subjects, provided such subjects are equivalent to one-third of all the work taken; otherwise in the next year above.

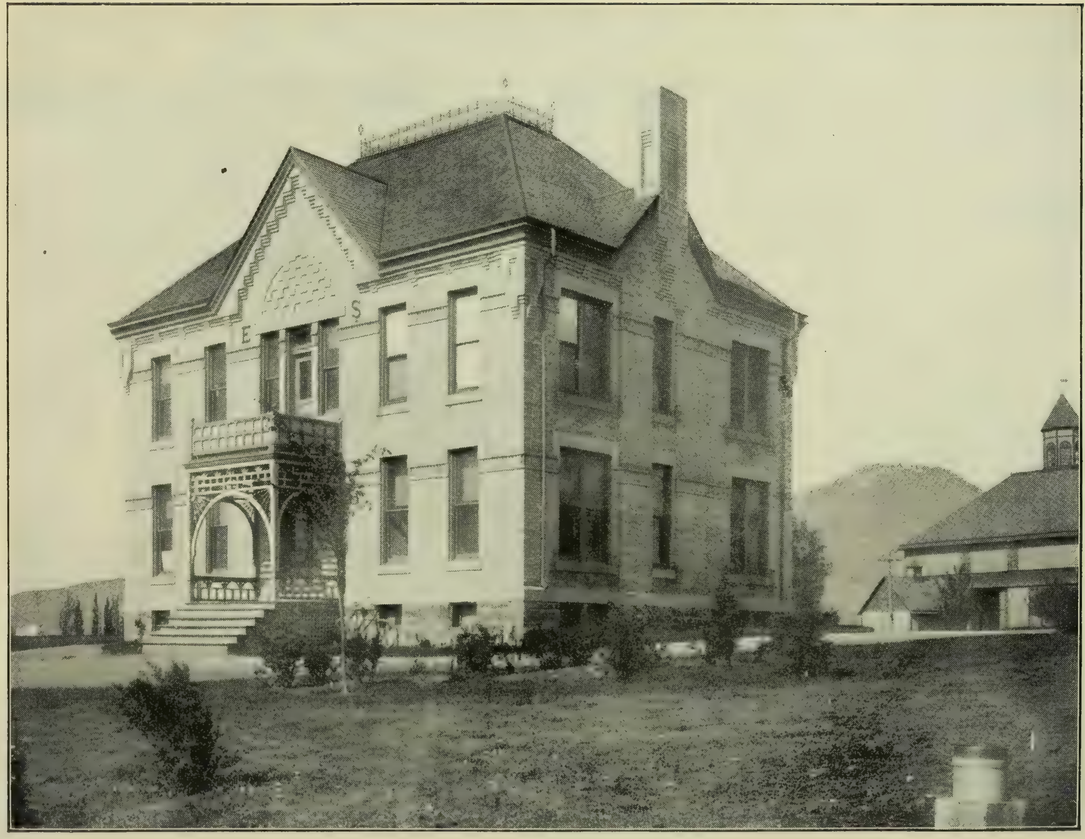
GRADUATION.

Students who complete any of the three year courses in agriculture, domestic science, commerce or manual training in domestic arts, or the four year course in manual training in mechanic arts, receive certificates of graduation. The degrees of Bachelor of Science, Bachelor of Science in Agriculture, Bachelor of Science in Domestic Science, Bachelor of Science in Commerce, Bachelor of Science in Civil Engineering, and Bachelor of Science in Mechanical Engineering, are conferred upon those who complete the regular four year courses in General Science, Agriculture, Domestic Science, Commerce, Civil Engineering, and Mechanical Engineering, respectively.

Instructors keep a record of recitations, marked according to the decimal system. In making up final examination percentages, this is counted one-third, the mid-term examination, one-third, and final examination for the term, one-third. But students who have been in a class only four-fifths, or less, of the term (or whose absences amount to one-fifth or more of the term) shall pass the whole subject on examination. In all courses, an average standing of not less than 75 per cent., with no grade less than 60 per cent. is required for graduation.

Students who completed the work of the Sub-Freshman Course in 1900-1901 will be admitted in 1901-1902 to freshman standing in any of the courses leading to degrees, being allowed to graduate upon the completion of the amount of work required as announced in the College catalogue for 1900-1901. Those who completed the work of the freshman, sophomore, or junior year in 1900-1901 will be allowed to continue their courses and graduate upon completion of the amount of work required at the time of entrance.

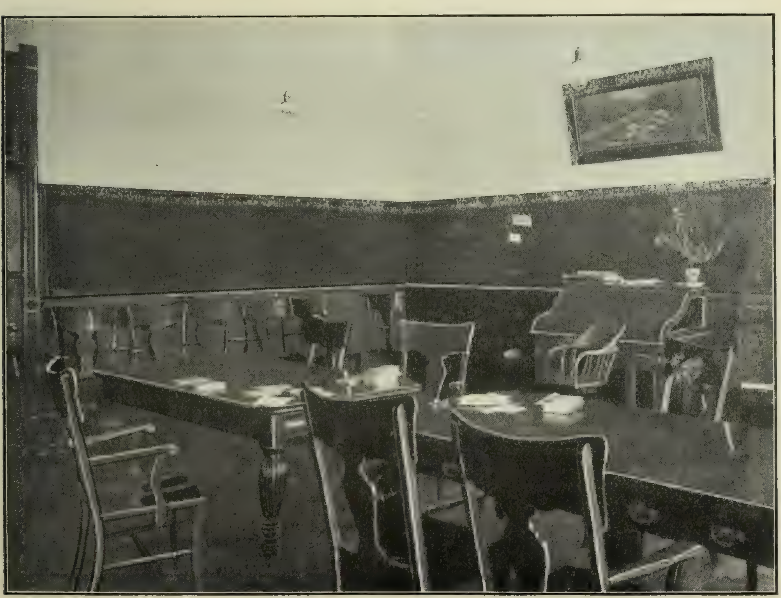
College Dormitory



Experiment Station Building.

MANZ CHICAGO

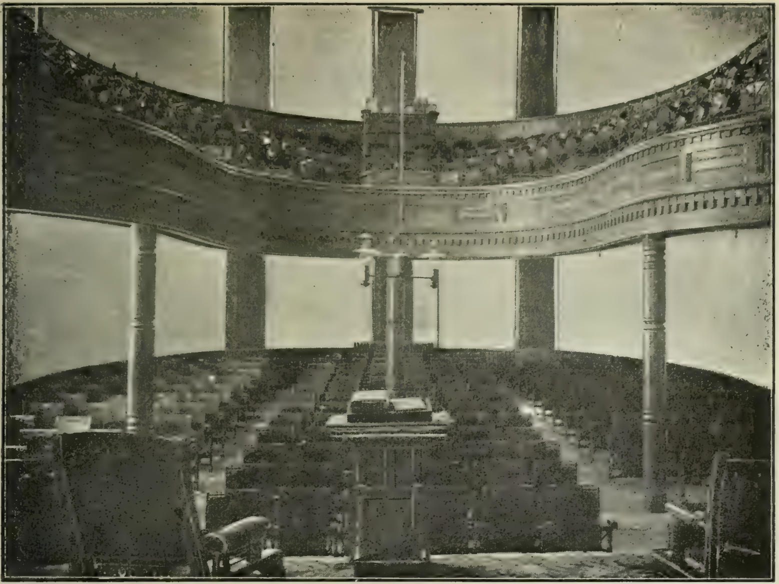
Residence of the President.



Faculty Room

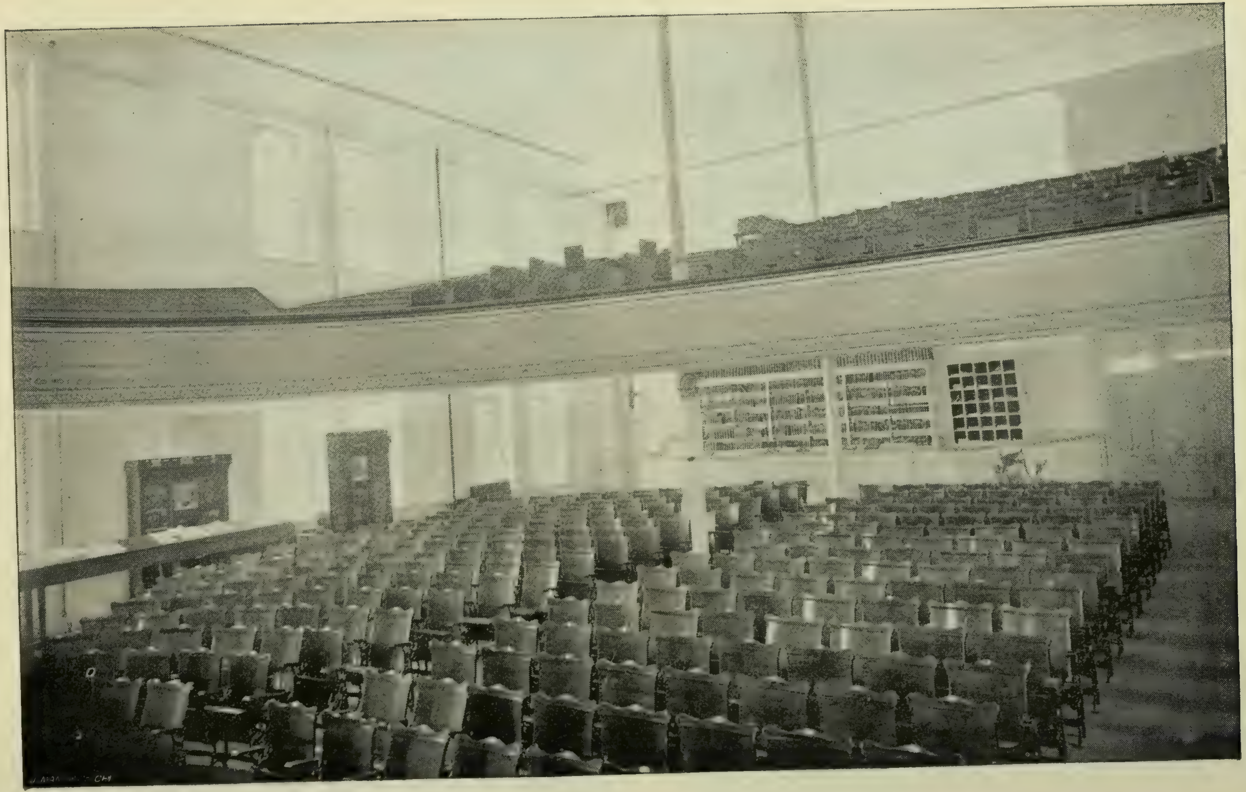
Corner in Library

Section of Reading Room

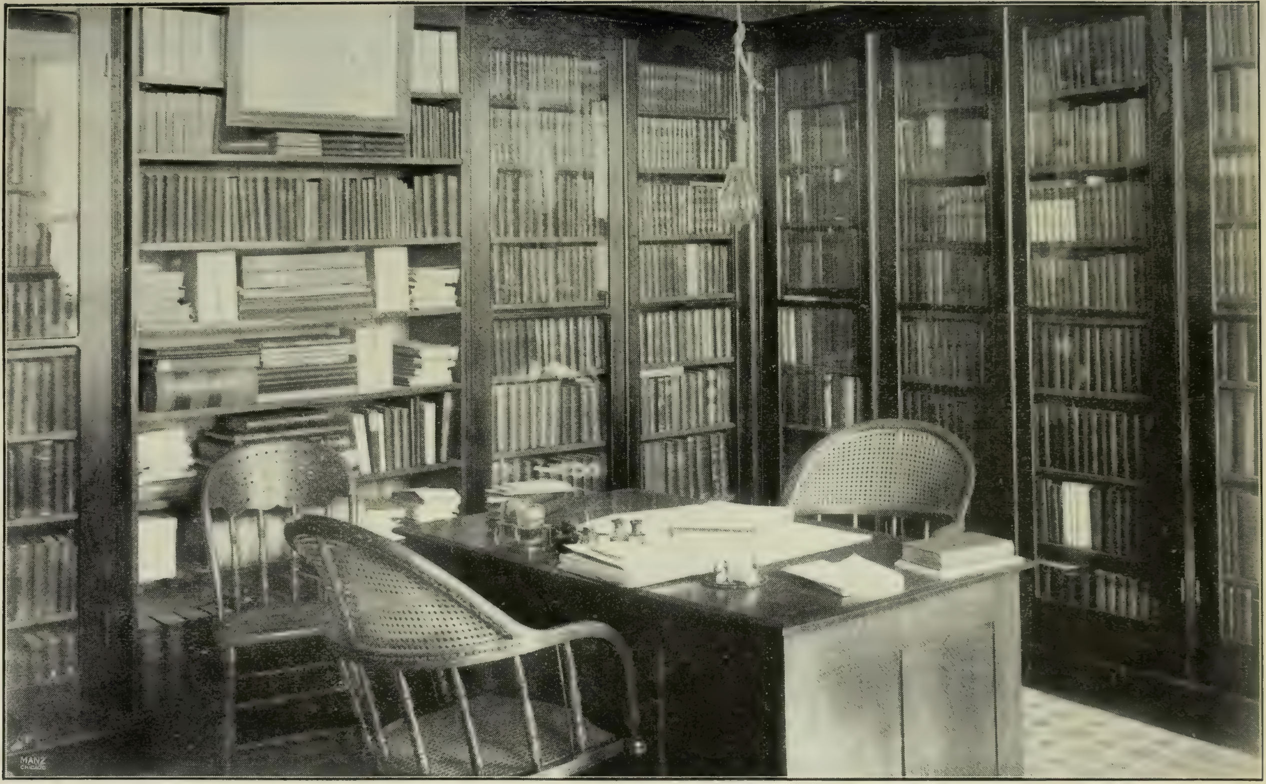


Society Hall.

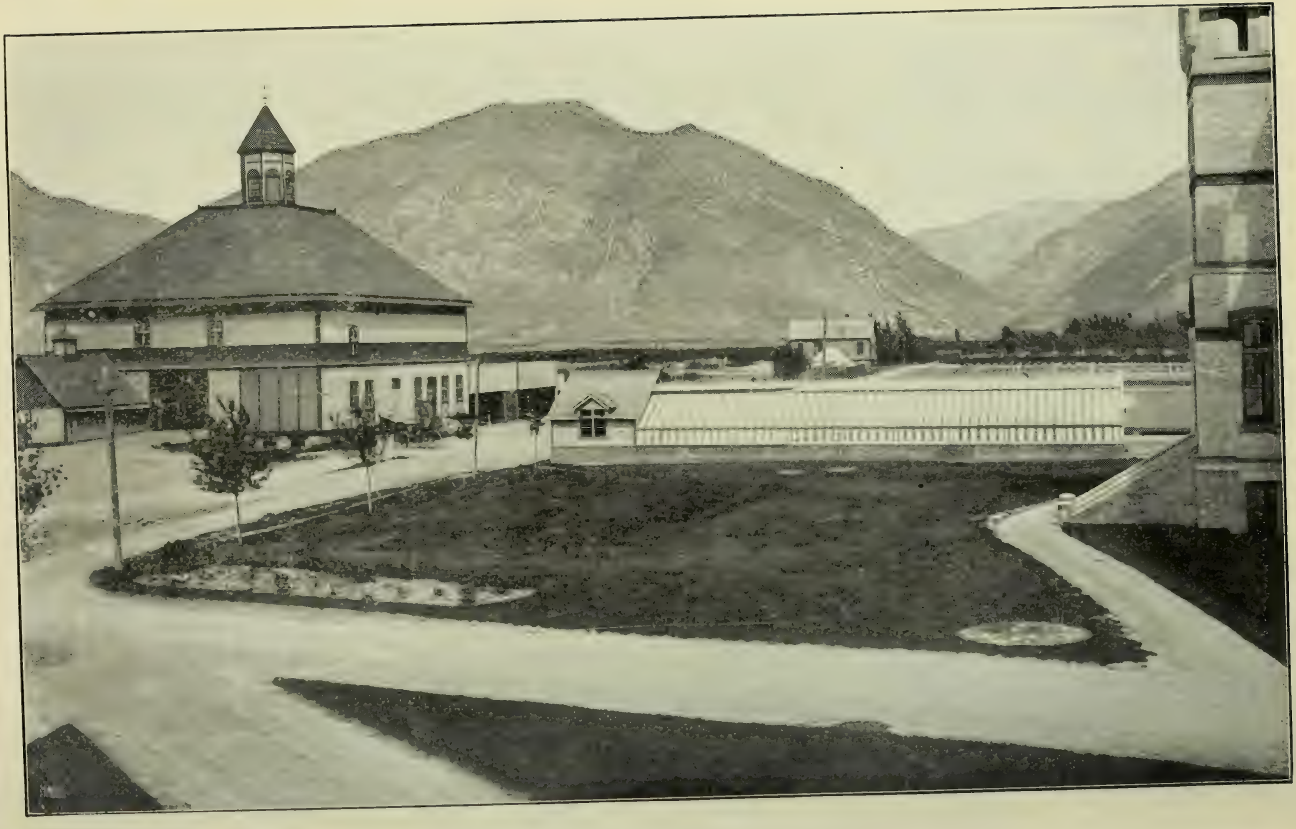
Corner in Gymnasium, Class in Physical Culture.



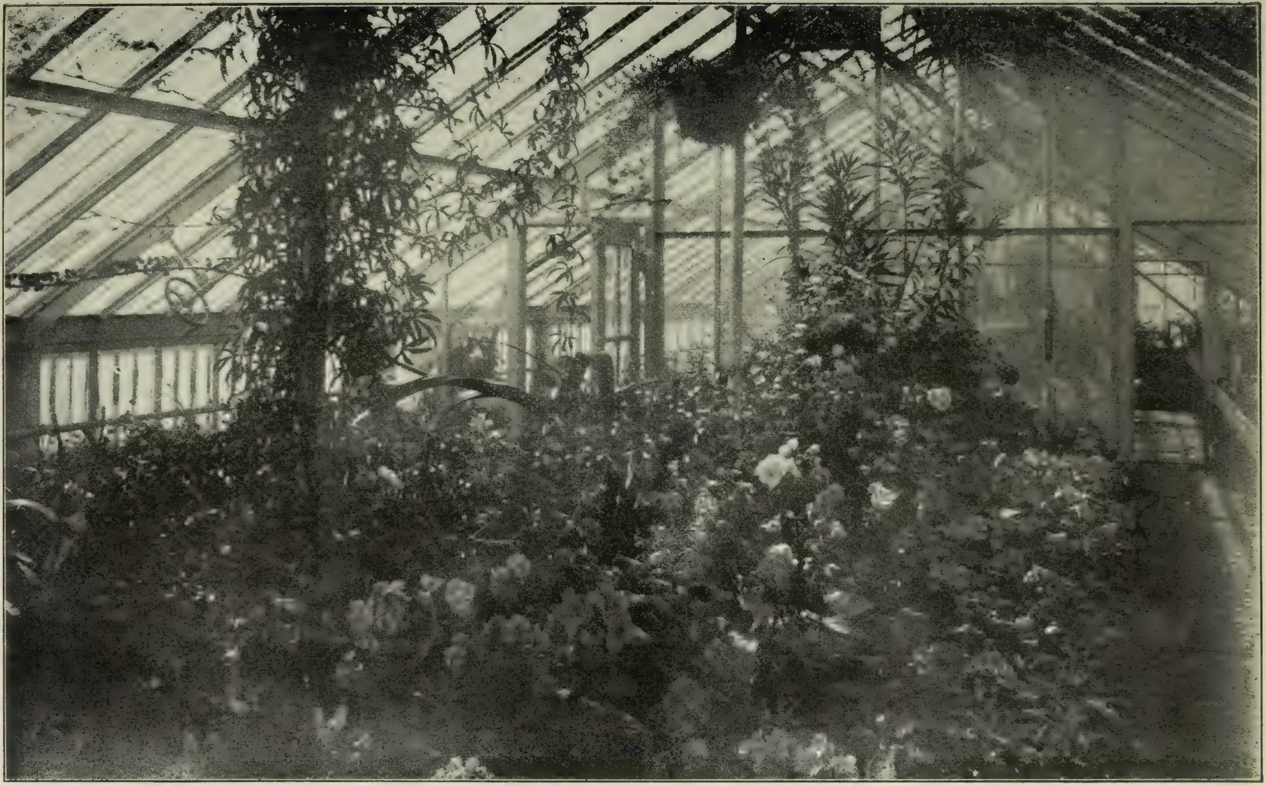
Auditorium


MANZ
CHICAGO

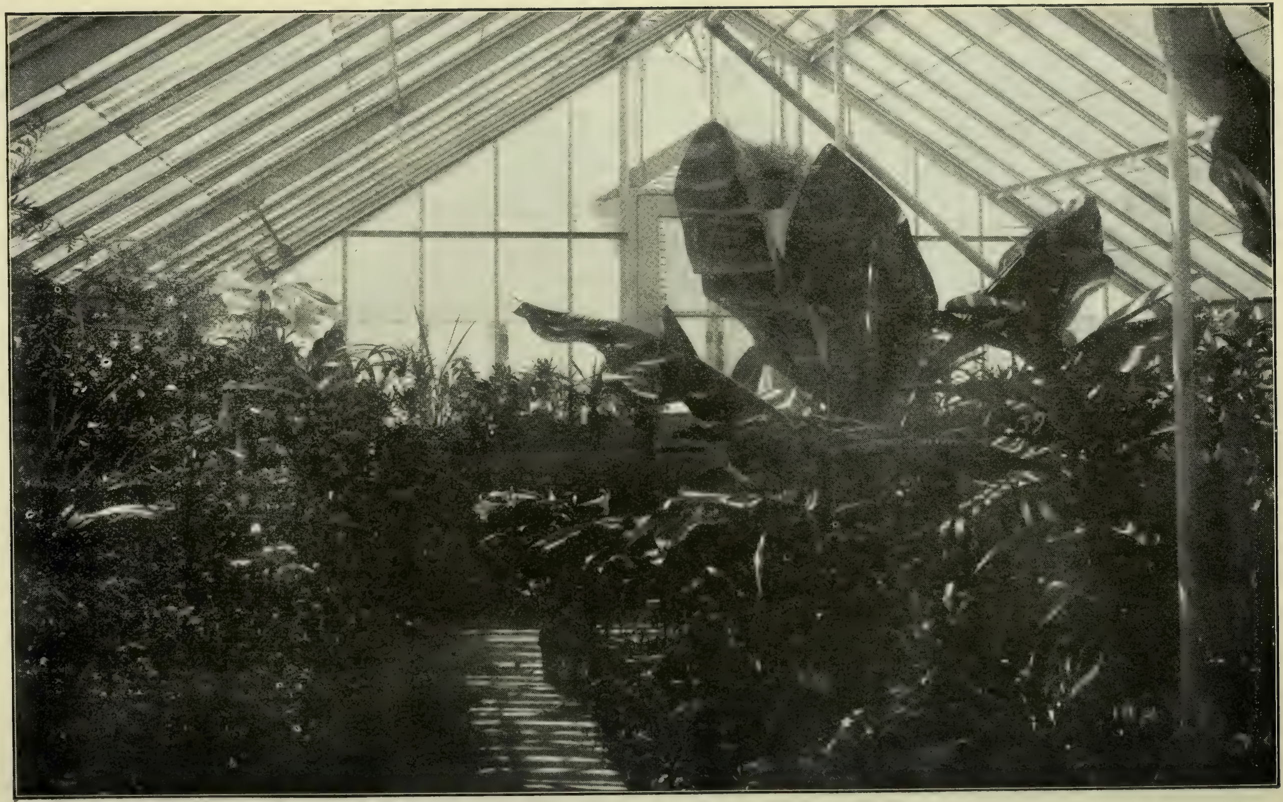
Section of English Library.



Barn, Conservatory, Veterinary Hospital.



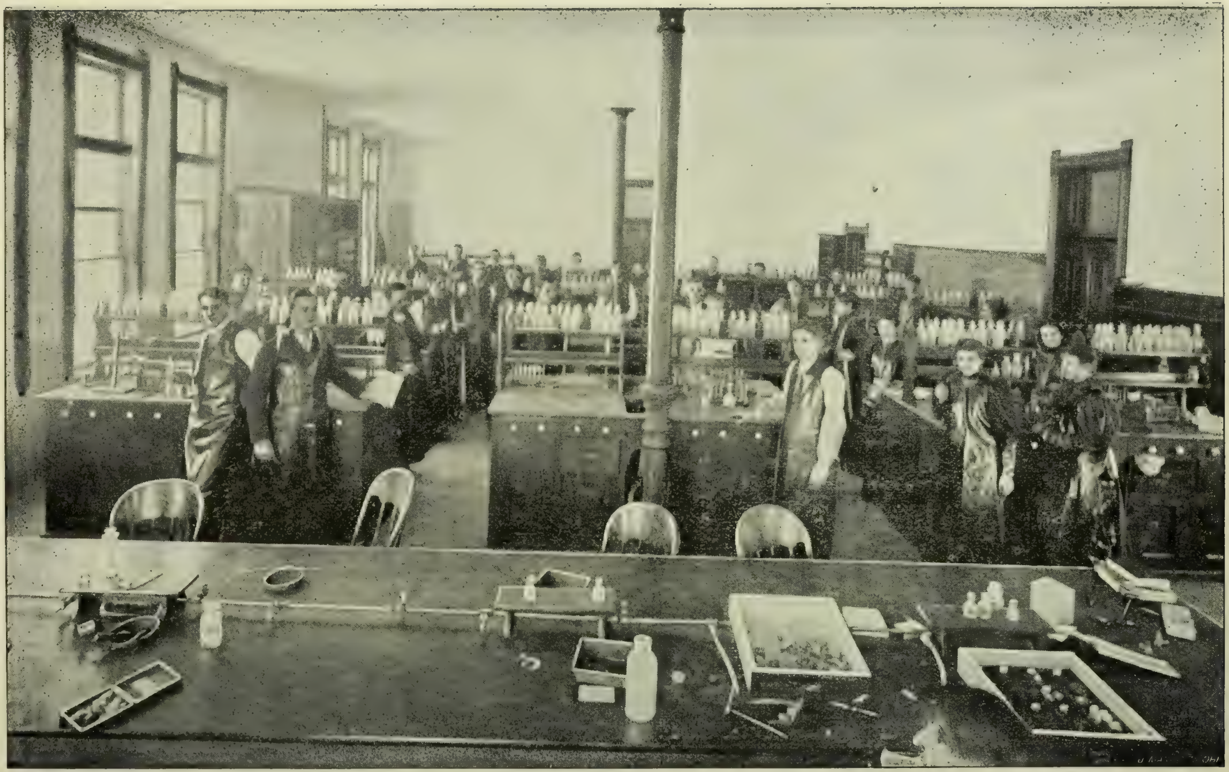
General View in Conservatory



Corner in the Palms House

Exhibit of Fruit from College Orchard at State Fair, 1900.

Section in Botanical Laboratory



Chemical Laboratory

Experiment Station Chemical Laboratory

Veterinary Laboratory.

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View in Biological Laboratory

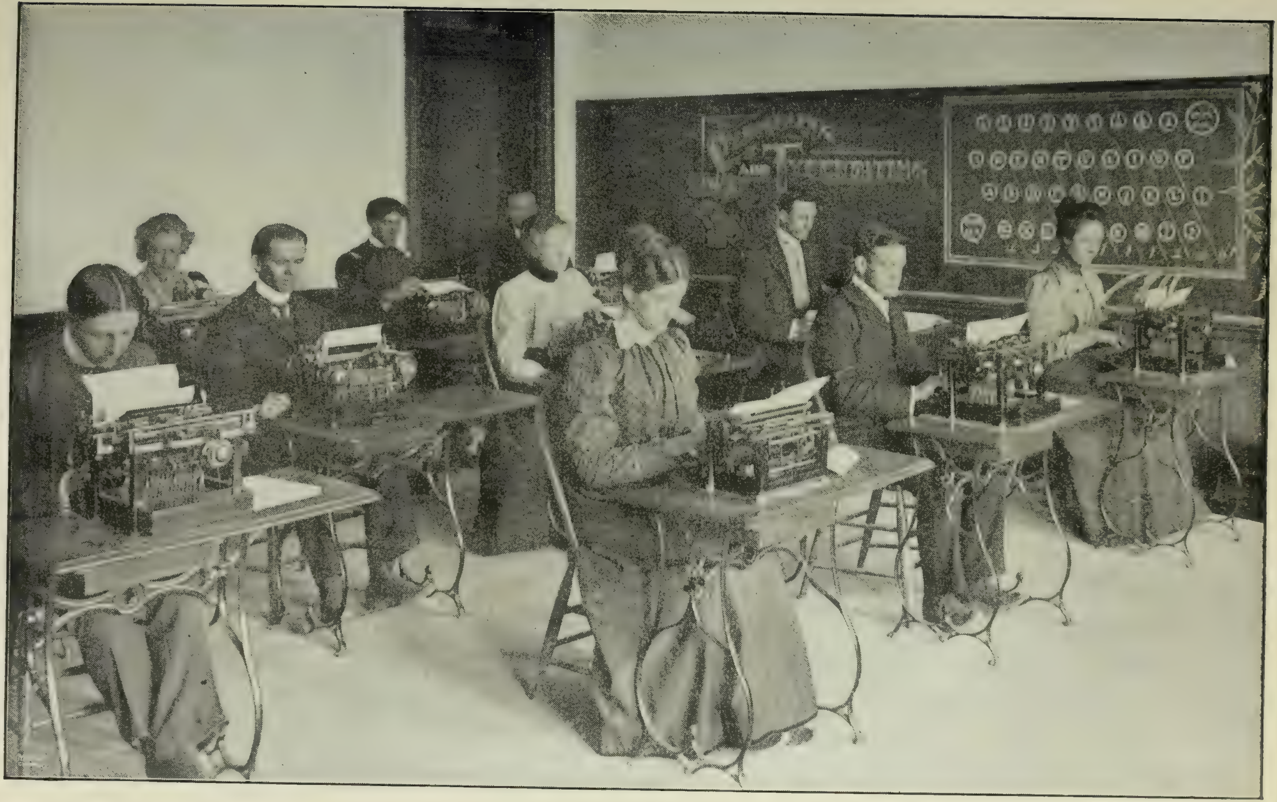
View in Physical Laboratory.

TELLER
CASHIER

View in Commercial Rooms.

THE WABASH RAILROAD

View in Commercial Rooms



Typewriting and Stenography.

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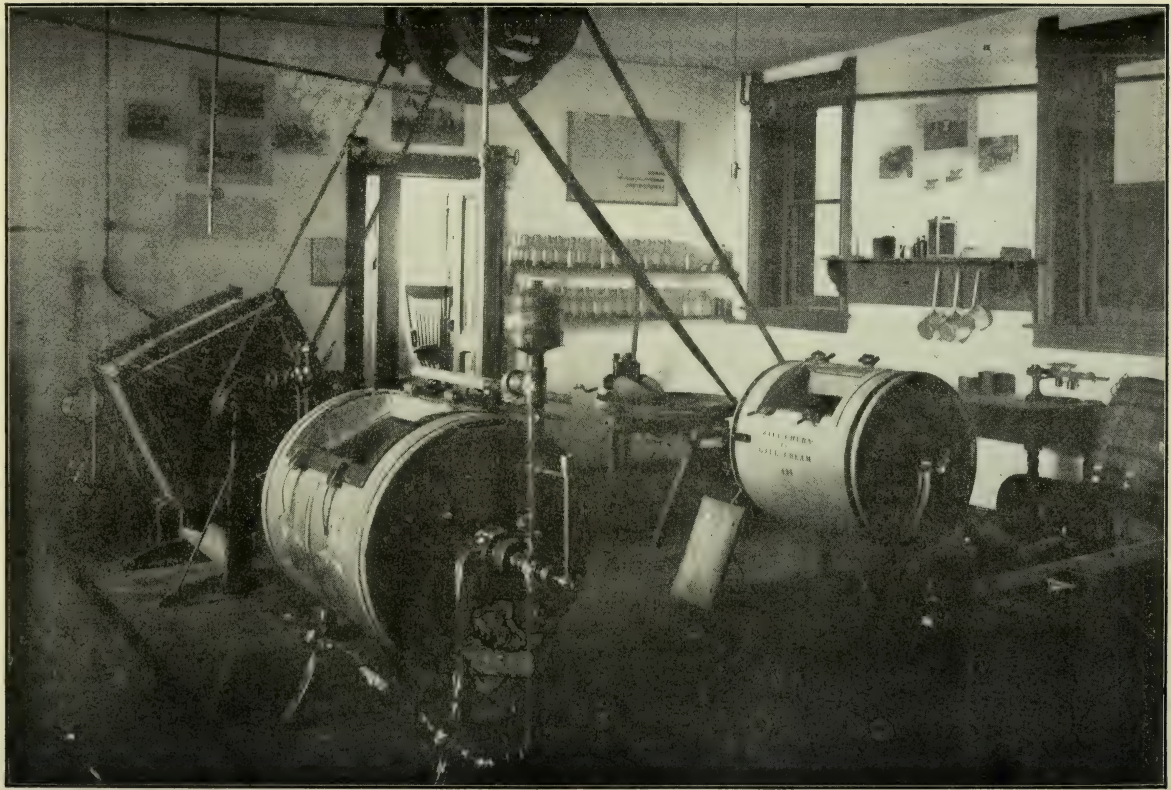
View in Sewing Rooms.

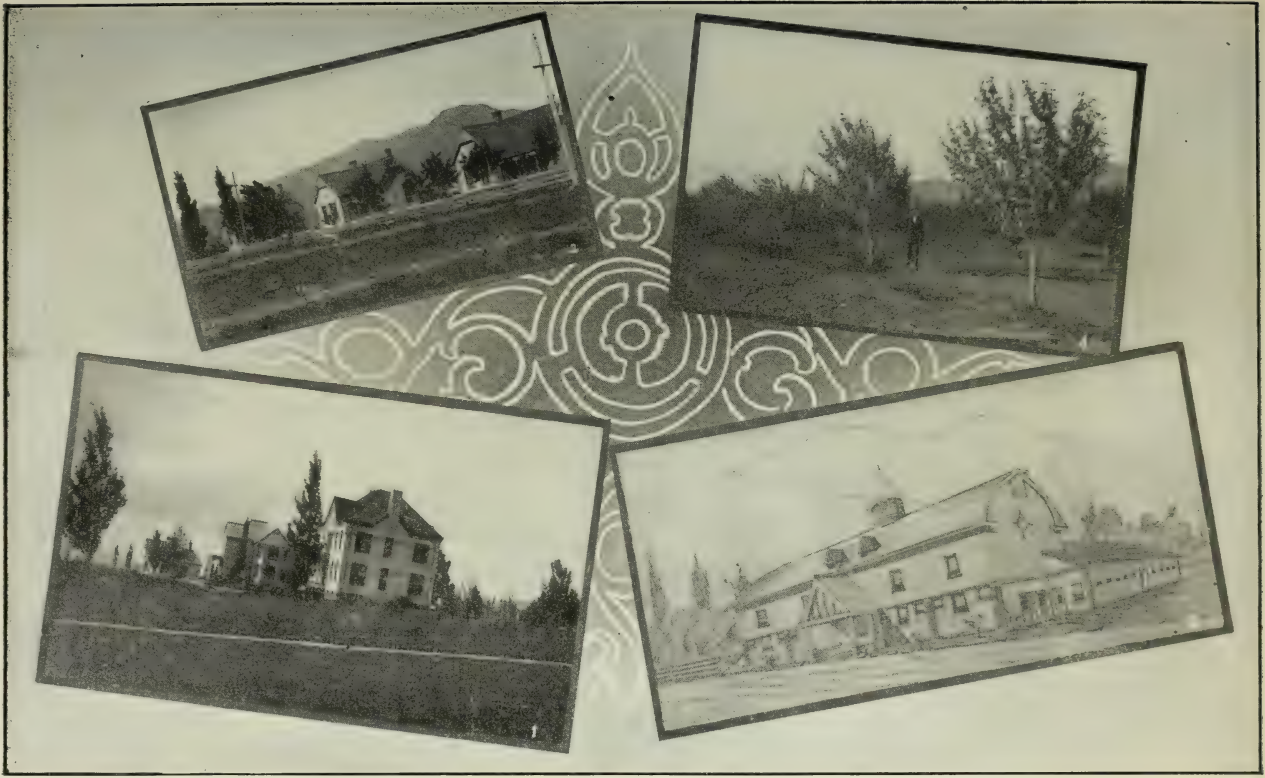
View in College Kitchen.

MANZ CHICAGO

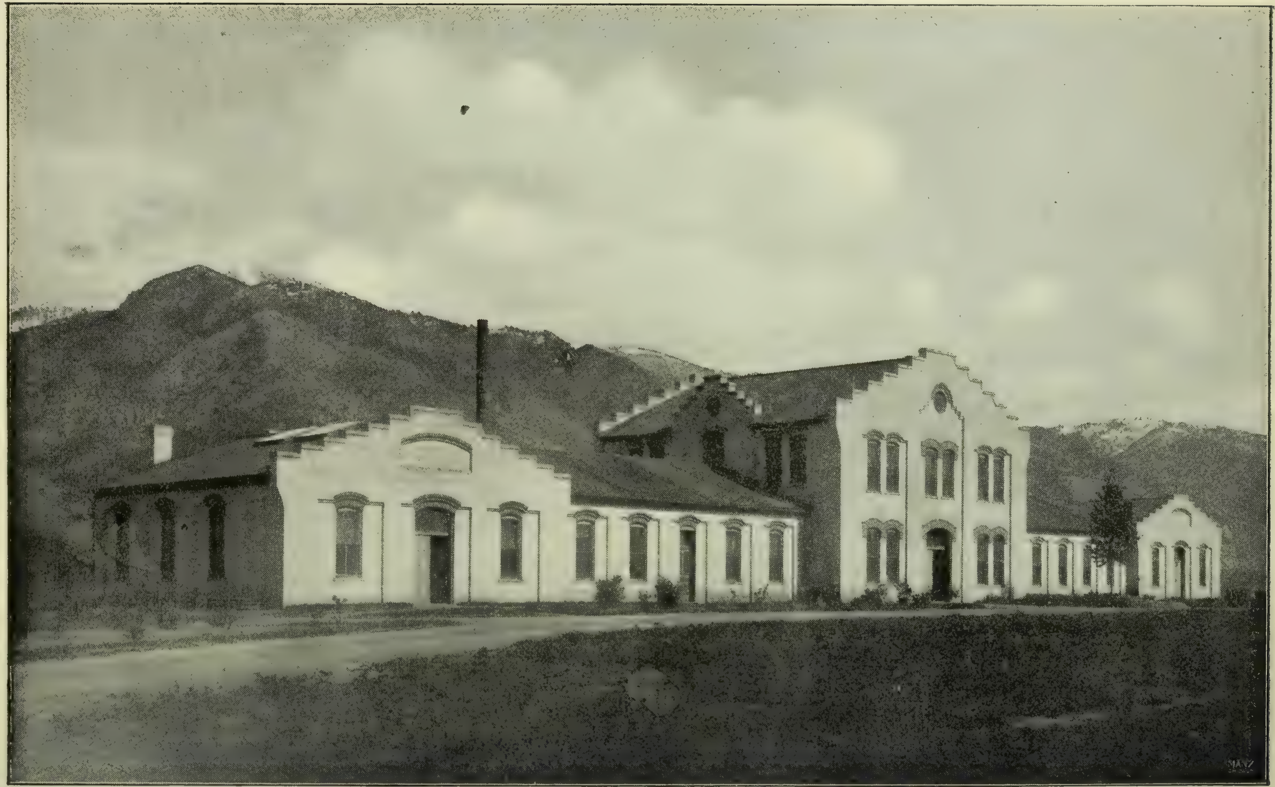
Corner of College Dining Room.



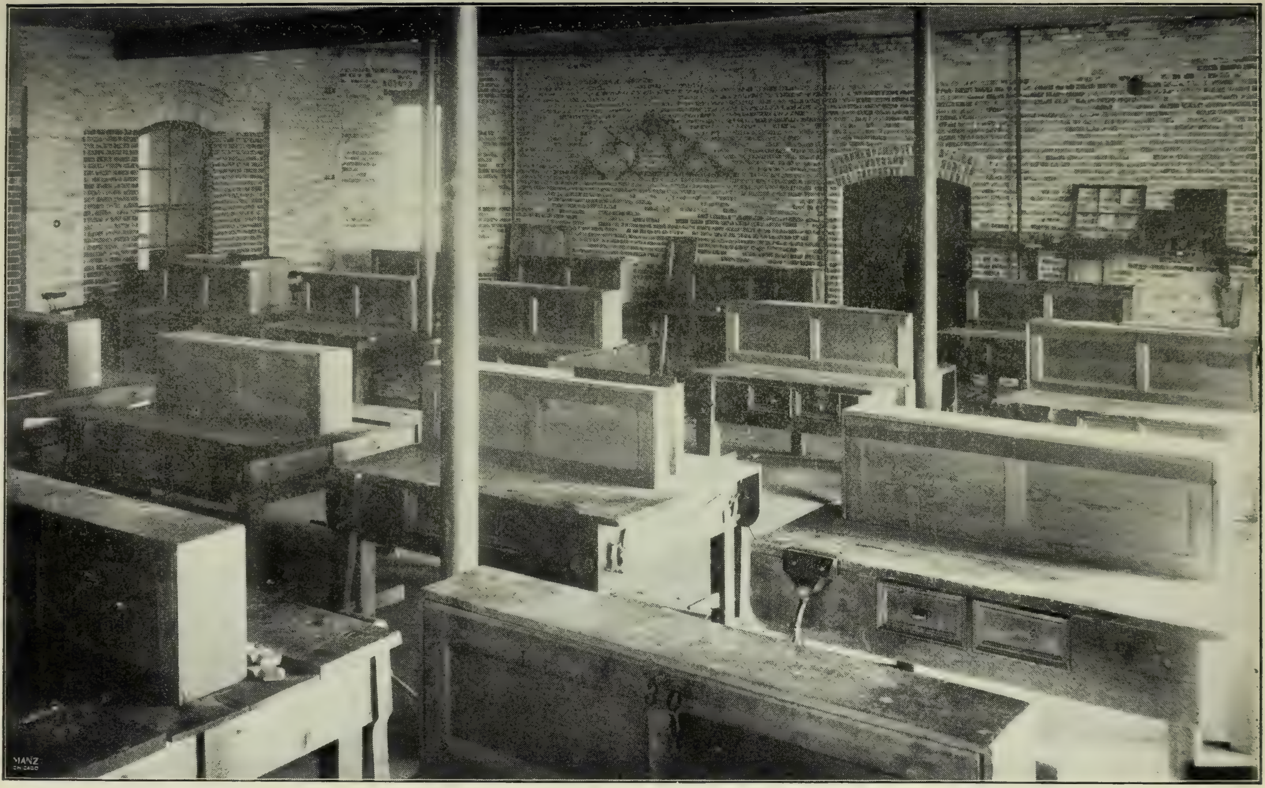
Dairy.



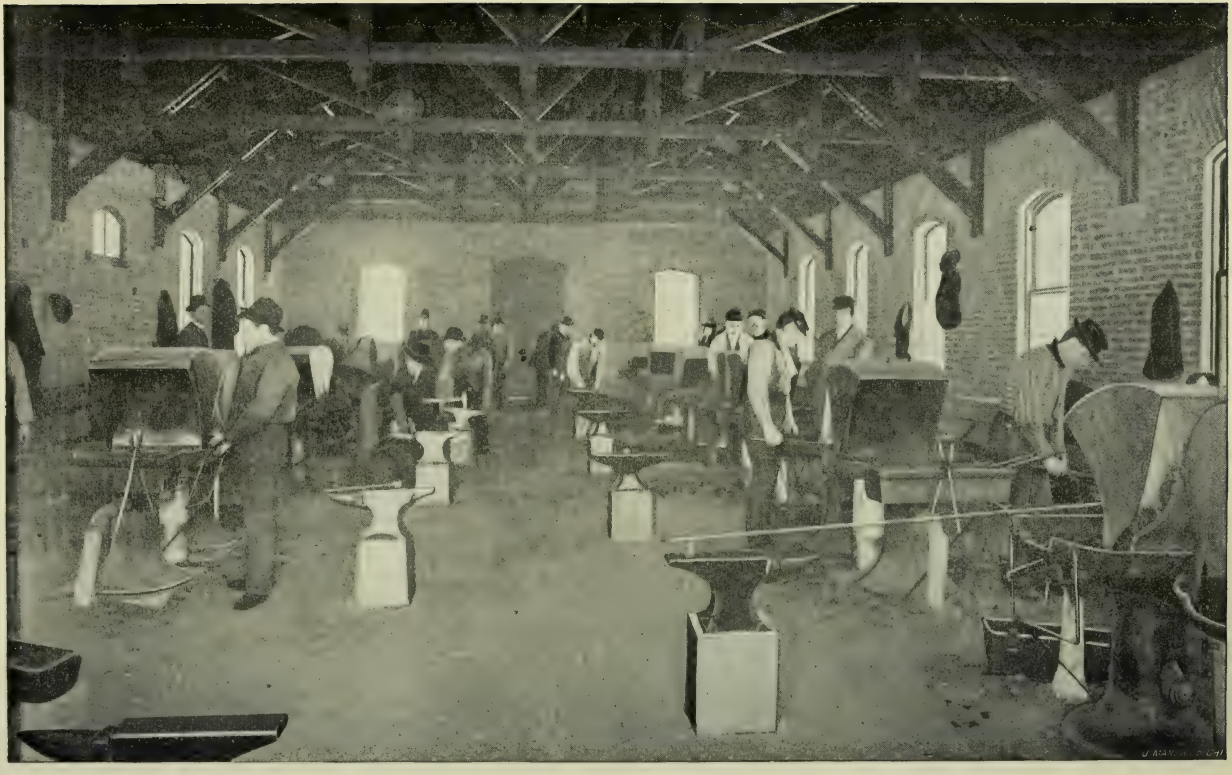
1. View of Campus, showing Experiment Station Building, President's Residence, Director's Residence.
2 Laborers' Cottages 4. View in Orchard 5 Cattle Barn.



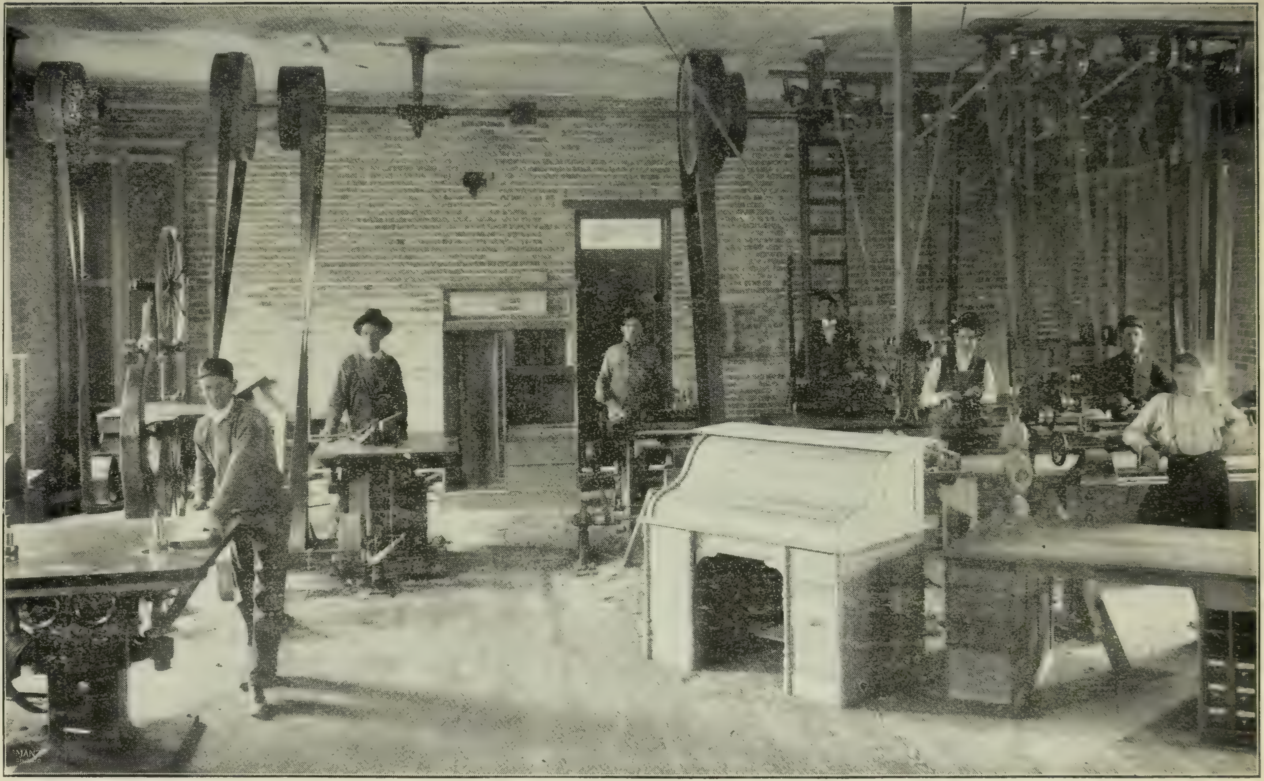
Mechanic Arts Building


MANZ CHICAGO

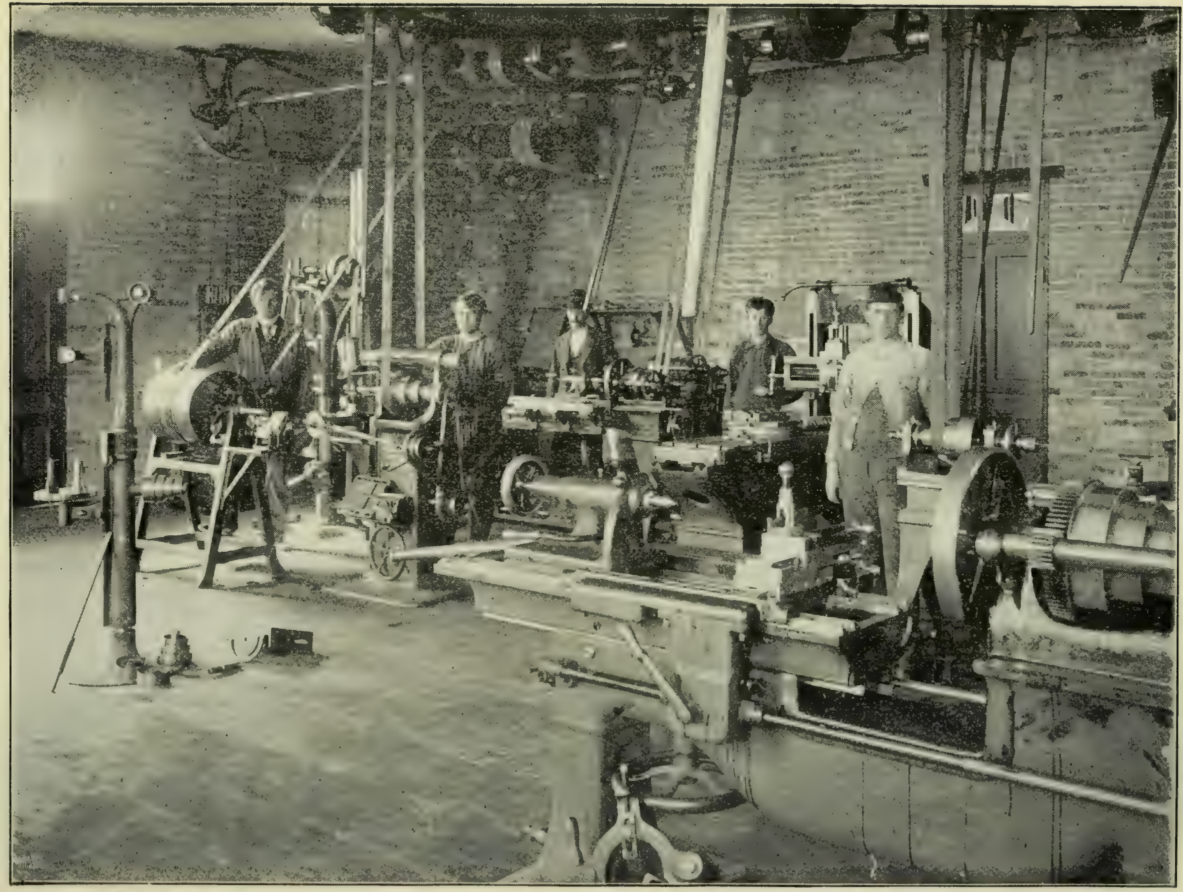
Carpenter Shop



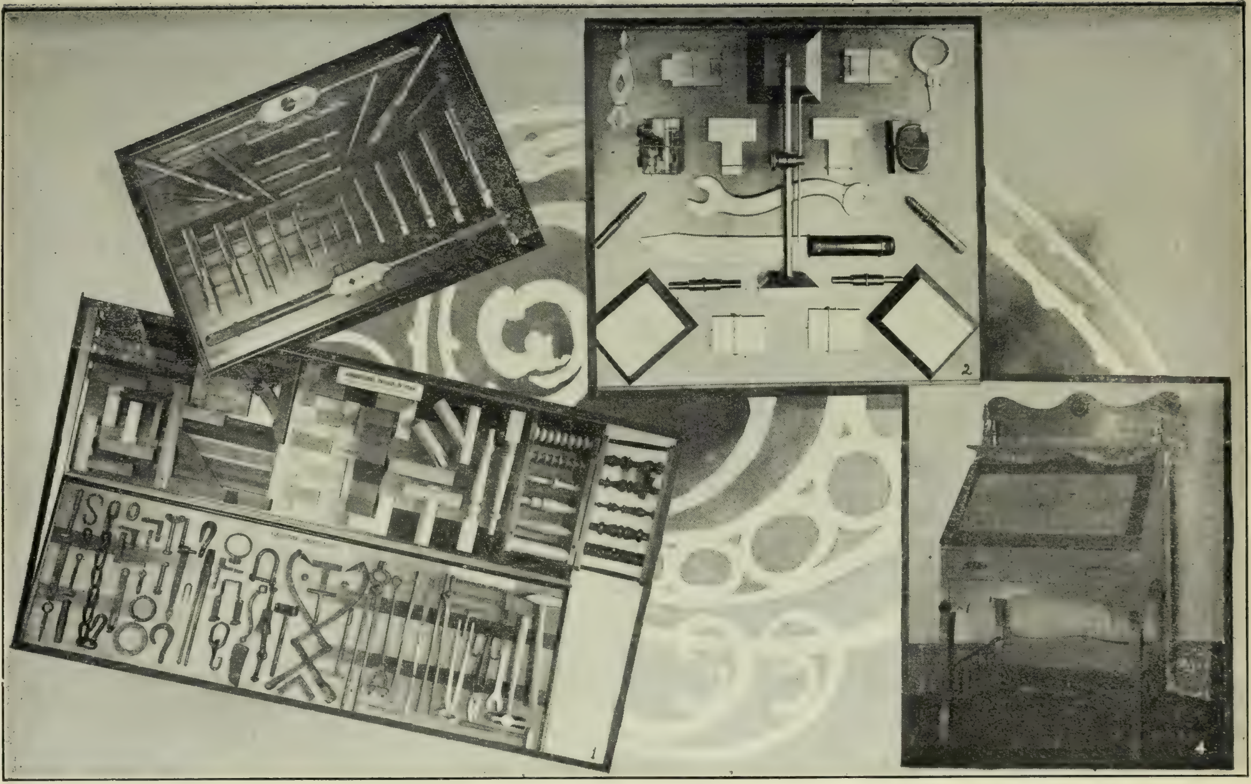
Forge Room.



Wood-Working Machine Room



Iron-Working Machine Room



Sample Exercises of Students in Mechanic Arts.

1. Student at Forge. 2. Student at Bench. 3. Apparatus Used in Irrigation Investigations.
4. Students Making Flumes for Irrigation Investigations. 5. Students
in Civil Engineering

Courses of Study.

The College offers the following courses: (1) Agricultural Course, four years; (2) Domestic Science Course, four years; (3) Commercial Course, four years; (4) Civil Engineering Course, four years; (5) Mechanical Engineering Course, four years; (6) General Science Course, four years; (7) Agricultural Course, three years; (8) Domestic Science Course, three years; (9) Commercial Course, three years; (10) Manual Training Course in Domestic Arts, three years; (11) Manual Training Course in Mechanic Arts, four years; (12) Engineering Preparatory Course, two years; (13) Preparatory Course, one year; (14) Special Winter Course in Agriculture.

The AGRICULTURAL COURSES are arranged especially for the general education and scientific training of agriculturists. In arranging the work of instruction in the three year course, the first purpose kept in view has been to meet the needs of that large class who expect to make the farm their home. The agricultural work begins in the first year and continues through the second and third years, making a fairly complete practical course. Those who can attend only one, two, or three years, will thus be made acquainted with facts and principles that cannot fail to help them in their farm work. Thorough courses are also given in English and mathematics, with sufficient elementary science to enable the student readily to comprehend the agricultural work given.

In the advanced course leading to a degree, the student is given that fundamental knowledge of science which will enable him to understand and grapple with the deeper problems in agricultural practice. In the junior and senior years the student is allowed to specialize either in Agronomy, in Animal Industry and Dairying, or in Horticulture. Those who complete this course are qualified to take positions as teachers and assistants in colleges and experiment stations, or as managers of large farms. This course, however, is designed not only to give special agricultural training, but to give a broad scientific education. The farmer in America is both proprietor and manager of his farm, and is moreover a citizen in a country where the citizen is sovereign. The education of such a man should be broad and suggestive. The Agricultural Course as arranged brings the student into contact with nearly all the specialists of the College, and opens to him many fields that invite future study and research.

The course is not arranged as a manual training course; but as practically all the students are from the farm, it is assumed that they are acquainted with the various manual operations of farm work. The aim is, therefore, to supplement this work by that technical training which, as a rule, the farm does not afford. Special emphasis is laid on the training of the faculties of observation, reason, and judgment; and from the first year of the course the student is made acquainted with those matters that will enable him to study profitably and with interest the best books and papers on agricultural topics.

The general and department libraries enable the student to become acquainted with a wide range of agricultural and related literature, while the laboratories of the College and the experiment station afford opportunity for training and experience that it would be impossible to get from books. The outline of the course and the description of the studies prescribed, will give a fuller understanding of the work offered.

A winter course in agriculture is provided, designed to meet the needs of young men of mature years, who desire to follow some agricultural pursuit, and who, though feeling the need of more thorough preparation for their work, can devote only the winter season for such preparation. The subjects presented are those about which every one engaged in agricultural pursuits should have a definite knowledge. They embody the underlying principles and the best practice. The class room instruction is supplemented by practice in the live stock judging room, veterinary hospital, College dairy, agricultural and horticultural laboratories and greenhouses, and by visits of inspection to herds and farms and other places of interest.

The courses in DOMESTIC SCIENCE and ARTS have for their object to broaden the minds of women and enable them to meet more intelligently the home demands of modern life. When woman has learned to apply the principles of science to the problems of daily living, she will realize that housekeeping is an occupation worthy of the best effort of the brightest minds; and that the broadest courses in science, economics, and ethics can be applied to the betterment of home life. Formerly the higher education of woman led her away from the practical interests of the home. The recent establishment of domestic science courses in many leading colleges and universities shows a public demand for education towards home life rather than away from it. This state wisely established such courses when this college was first organized; and the favor with which the work has been received by the public shows the wisdom of the plans. The Domestic Science Course has been strengthened and improved each year, and better facilities for instruction and study have been generously provided. The four year course gives the same training in mathematics, in English, and in science as is given in other courses, together with a broader culture in literature and modern languages than offered in any others, in addition to the special studies in home science, which are its distinctive features. The three year course is arranged for the accommodation of those who are unable to complete the longer course. The MANUAL TRAINING COURSE IN DOMESTIC ARTS is offered for the benefit of those young women who do not wish to take the studies of the regular college course but desire to devote more time to the subjects of especial interest to women. Such other studies as the student is qualified to pursue may, with the consent of the Faculty, be substituted for those offered in this course.

The primary object of the COMMERCIAL COURSE is to broaden the intelligence of accountants, and prepare students for positions as business men. These form a large class having a direct and important relation to the material, social, and political life of the nation. They should, then, have associated with their technical work a knowledge of those subjects that will give them an enlarged view of their varied relations as citizens of the state. The College, therefore, offers here a much broader general education than is common in commercial schools. The course is so arranged that students who complete the first three years, will receive a certificate of graduation, and on completion of the full course, the regular baccalaureate degree. Students who are unable to continue through the entire course, but finish the first three years, will be well prepared to do office work. The technical feature of the course is a thorough training in penmanship, typewriting, stenography, commercial calculations, bookkeeping, business economics, political economy, history of commerce, commercial law, commercial geography, constitutional and international law.

Those who expect to enter upon the profession of law will find this course affords an admirable preparation. Students who complete the course will be well prepared for positions as teachers in commercial and department schools where courses in commerce are given. The demand for thoroughly qualified teachers along this line of work is greater than the supply, and many desirable positions are open to those prepared to do the required work.

The CIVIL ENGINEERING COURSE is designed to afford a training in those subjects which pertain to the profession of the civil engineer, in regard to different classes of structure, and public works. The theoretical portion of the instruction is based largely on the courses given in the departments of Mathematics and Physics, and the results obtained are applied to practical problems in field work and engineering designs. The first two years are devoted to studies which belong naturally to the beginning years of undergraduate study, but the last two years are devoted largely to those subjects which have a more immediate relation to professional work. Unusual opportunities are afforded the student for practical hydrographic work by reason of the irrigation experiments on the station farm and the co-operation of the department with the Division of Hydrography of the United States Geological Survey and the United States Irrigation Investigations. Other prominent features of the course are the drawing room practice, and supplementary reading in the College library.

The aim of the MECHANICAL ENGINEERING COURSE is to afford the student such training as will qualify him to deal intelligently with engineering problems in general, and prepare him for a professional career. The instruction in all branches aims to blend the theoretical with the practical, so that the student may become familiar not only with the purely scientific phase of the work, but with its application to modern practice. As early as possible the student is brought into contact with practical problems, the graphical as well as the analytical method being used throughout their solution. Besides the practical tendency of the course, it has a high disciplinary value, and is especially adapted to develop originality of thought and action. The more strictly professional work may be classified as mathematics, physics, applied mechanics, drawing, and shopwork. Sufficient work in English, history, and other general subjects is given throughout the course to meet all ordinary demands.

The GENERAL SCIENCE COURSE corresponds to the usual baccalaureate course in science in higher institutions of learning. It is designed to furnish a liberal and thorough education, embracing the broad field of general science, mathematics, language, history, and literature. Scientific subjects characterize the work of the course. During the freshman year the students are thoroughly drilled in the subjects necessary to the more advanced special work of investigation. During the sophomore, junior, and senior years, students elect the subjects in which they have greatest interest; being allowed, under the direction of the committee on General Science work, to specialize in any of the subjects of chemistry, biology, mathematics, physics, etc.

The MANUAL TRAINING COURSE IN MECHANIC ARTS extends through four years, during the whole of which the students spend three hours daily in the workshop. While the general object is to give students taking the course a good elementary education, the special aim is to make tradesmen in three branches, carpentry, forging, and machine work. In the assignment of exercises in the shop and draughting room, the application of these exercises to practical construction or design is constantly kept in mind. In the shop, the method of instruction is to exhibit each new process before the class with such explanation as shall render each step plain. Then each student is supplied with material and scale drawing of the article to be made, and proceeds with his work under the constant supervision of the instructor. The principles of economy, neatness, and rigid accuracy are insisted upon in the construction of even the most trivial objects. Each student, whether specializing in wood or iron, is required to take at the beginning, one year in wood-work. In all cases, students are required to do at least one year's work with hand tools before beginning machine work.

In the ENGINEERING PREPARATORY COURSE students are thoroughly drilled in the subjects required for admission to the courses in Civil Engineering, Mechanical Engineering, and General Science.

The PREPARATORY COURSE is arranged to accommodate those young men and women who have been deprived of educational advantages until they have reached an age when they cannot advantageously attend the district schools. The special aim is to prepare the students for admission to the more advanced courses of the College, and to provide such training as will be of most value to those who are unable to continue their educational work beyond this course.

AGRICULTURAL COURSE.

This course leads to the degree B. S. in Agriculture.

Freshman Year.	1st Term.		2nd Term.
Chemistry 1	5		5
Physics 1	3	Vet. Science 2	4
An. Industry 2, 6	5	Agronomy 3	5
An. Industry 9	1	Bus. Customs	3
Horticulture 1	3		
	17		17

Sophomore Year.	1st Term.		2nd Term.
English 6	3		3
Mathematics 4	5		5
Animal Biology 2	3		3
Botany 2	5	Physics 1	3
		Meteorology	2
	16		16

Junior Year.	1st Term.		2nd Term.
English 7	3		3
German or French	3		3
Geology 1	3		3
Chemistry 3	3		3
An. Industry 3, 4; or An. Biology 10 and Agronomy 5	4	Vet. Sc. 3; or Agronomy 4, 5	4
	16		16

Senior Year.	1st Term.		2nd Term.
German or French	3		3
Economics	3		3
Mineralogy	2	Entomology	2
Thesis	1		1
Vet. Sc. 4 and An. Biology 8; or C. E. 1 and Agronomy 6; or Horticul. 2, 3, 4, 5	7	An. Industry 5 and *Elective; or C. E. 5 and †Elective; or Horticul. 2, 3, 4, 5	7
	16		16

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*Animal Industry 7 or 10, Agronomy 4, or C. E. 5.

†Animal Industry 5 or Horticulture 2 b.

DOMESTIC SCIENCE COURSE.

This course leads to the degree B. S. in Domestic Science.

Freshman Year.	1st Term.		2nd Term.
English 6	3		3
Drawing 3	2		2
Chemistry 1	5		5
H. S. 8, 9, 11	5		5
H. S. 5, 10, 12	2		2
	17		17

Sophomore Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 4	5		5
Physics 1	3		3
Botany 2	5	Horticulture 6	3
		Meteorology	2
	16		16

Junior Year.	1st Term.		2nd Term.
English 7	3		3
German or French	3		3
Chemistry 2	3		3
An. Biology 8, 9	3		3
Elective	4		4
	16		16

Senior Year.	1st Term.		2nd Term.
H. S. 13, 14	5		5
Mineralogy	2	Entomology	2
Chemistry 4	2		2
Thesis	1		1
Elective	6		6
	16		16

COMMERCIAL COURSE.

This course leads to the degree B. S. in Commerce.

Freshman Year.	1st Term.	2nd Term.
English 6	3	3
Mathematics 3	5	5
Civil Government	2	2
Commercial Law	3	3
Commercial Geography	2	2
Bookkeeping III or Stenography II	2	2
	17	17

Sophomore Year.	1st Term.	2nd Term.
Mathematics 4	5	5
Chemistry 1	5	5
Physics 1	3	3
History of Commerce	3	Const. and Int. Law 3
	16	16

Junior Year.	1st Term.	2nd Term.
English 7	3	3
German, French, or Spanish	3	3
Sociology	5	Economics 5
Elective	5	5
	16	16

Senior Year.	1st Term.	2nd Term.
German, French, or Spanish	3	3
Transportation	5	Banking and Finance. 5
Elective	8	8
	16	16

CIVIL ENGINEERING COURSE.

This course leads to the degree B. S. in Civil Engineering.

Freshman Year.	1st Term.		2nd Term.
English 6	3		3
Mathematics 4	5		5
Chemistry 1	5		5
Physics 1	3		3
Drawing 4	1		1
	17		17

Sophomore Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 5	5		5
Mathematics 6	2		2
Physics 2	3		3
C. E. 1	3		3
	16		16

Junior Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 7	3	M. E. 8	3
C. E. 3	3		3
C. E. 2	5	M. E. 2	5
Geology 2	2		2
	16		16

Senior Year.	1st Term.		2nd Term.
M. E. 3	5		5
C. E. 4	3	C. E. 6	3
C. E. 7	3	C. E. 9	3
C. E. 8	2		2
C. E. 10	1		1
Elective	2		2
	16		16

MECHANICAL ENGINEERING COURSE.

This course leads to the degree B. S. in Mechanical Engineering.

Freshman Year.	1st Term.		2nd Term.
English 6	3		3
Mathematics 4	5		5
Physics 1	3		3
Chemistry 1	5		5
Drawing 4	1		1
	17		17

Sophomore Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 5	5		5
Physics 2	3		3
Mathematics 6	2		2
C. E. 1a	3	Carpentry 6	3
	16		16

Junior Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 7	3	M. E. 7	3
M. E. 1	5	M. E. 2	5
C. E. 3	3		3
Machine Work 5	2		2
	16		16

Senior Year.	1st Term.		2nd Term.
M. E. 3	5		5
M. E. 5	5		5
M. E. 4	3		3
M. E. 6	2		2
M. E. 8	1		1
	16		16

GENERAL SCIENCE COURSE.

This course leads to the degree B. S.

Freshman Year.	1st Term.	2nd Term.
English 6	3	3
Mathematics 4	5	5
Physics 1	3	3
Chemistry 1	5	5
	16	16

All the work of the sophomore, junior, and senior years is elective; but students are required to complete two years' work in modern languages, and to take an equivalent of five hours through one year in biology, five hours through one year in English, and one course in history and civics.

AGRICULTURAL COURSE.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.		2nd Term.
English 3	5		5
English 4	3		3
Mathematics 2	5		5
Agronomy 1	3	An. Industry 1, 8	3
Drawing 1	2		1
Military Drill	1		1
	19		19

Second Year.	1st Term.		2nd Term
English 5	5		5
Mathematics 3	5		5
Animal Biology 1	2		2
Agronomy 2	3	Botany 1	3
Carpentry 5	2	Forging 4 b	2
Military Drill	1		1
	18		18

Third Year.	1st Term.		2nd Term.
Chemistry 1	5		5
Physics 1	3	Vet. Science 2	4
An. Industry 2, 6	5	Agronomy 3	5
An. Industry 9	1	Bus. Customs	3
Horticulture 1	3		
	17		17

DOMESTIC SCIENCE COURSE.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.	2nd Term.
English 3	5	5
English 4	3	3
Mathematics 2	5	5
History 1	3	3
Sewing 1, 2	2	2
Physical Culture	1	1
	19	19

Second Year.	1st Term.	2nd Term.
English 5	5	5
Mathematics 3	5	5
Animal Biology 1	2	2
History 2	3	Botany 1 3
H. S. 1, Sewing 3, 4	2	2
Physical Culture	1	1
	18	18

Third Year.	1st Term.	2nd Term.
English 6	3	3
Drawing 3	2	2
Chemistry 1	5	5
H. S. 8, 9, 11	5	5
H. S. 5, 10, 12	2	2
	17	17

COMMERCIAL COURSE.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.	2nd Term.
English 3	5	5
English 4	3	3
Mathematics 2	5	5
History 1	3	3
Bookkeeping 1	2	2
Military Drill or Physical Culture	1	1
	19	19

Second Year.	1st Term.	2nd Term.
English 5	5	5
Commercial Calculations	3	3
Animal Biology 1	2	2
History 2	3	3
Bookkeeping II or Stenography I	3	3
Typewriting	2	2
Military Drill or Physical Culture	1	1
	19	19

Third Year.	1st Term.	2nd Term.
English 6	3	3
Mathematics 3	5	5
Civil Government	2	2
Commercial Law	3	3
Commercial Geography	2	2
Bookkeeping III or Stenography II	2	2
	17	17

MANUAL TRAINING COURSE IN DOMESTIC ARTS.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.	2nd Term.
English 1	5	5
English 2	5	5
Mathematics 1	5	5
Penmanship	2	2
Sewing 1, 2, 3	3	3
Phys. Culture	1	1
	21	21

Second Year.	1st Term.	2nd Term.
English 3	5	5
Drawing 1	2	2
H. S. 1, 2, 3	2	2
H. S. 6	5	5
Sewing 4, 5	3	3
Phys. Culture	1	1
	18	18

Third Year.	1st Term.	2nd Term.
English 4	3	3
Mathematics 2	5	5
History 1	3	3
H. S. 7	2	2
H. S. 4, 5	2	2
Sewing 6, 7	3	3
	18	18

MANUAL TRAINING COURSE IN MECHANIC ARTS.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.		2nd Term.
English 2	5		5
Mathematics 1	5		5
Penmanship	2		2
Geography	5		5
*(1)(2)(3)Carpentry 1	5	(1)(2)Carpentry 1 or (3) Machine work 1	5
	22		22

Second Year.	1st Term.	2nd Term.
English 1	5	5
Mathematics 2	5	5
Drawing 2	2	2
(1) Carpentry 2, or (2) Forging 1, or (3) Machine Work 2	5	5
Millitary Drill	1	1
	18	18

Third Year.	1st Term.	2nd Term.
English 3	5	5
Mathematics 3	5	5
Drawing 5	2	2
(1) Carpentry 3, or (2) Forging 2, or (3) Machine Work 3	5	5
Military Drill	1	1
	18	18

Fourth Year.	1st Term.	2nd Term.
Physics 1	3	3
History 1	3	3
Animal Biology 1	2	2
Drawing 6	3	3
(1) Carpentry 4, or (2) Forging 3, or (3) Machine Work 4	5	5
	16	16

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*The numbers preceding the shop courses indicate the order in which students who intend completing the course are required to take the subjects; e. g., a student having elected (3) in the second term of the first year will be expected to continue with the subject marked (3) in each succeeding year. A student having taken carpentry during the first year, may elect (2) in the second year and continue with (2) through each succeeding year.

ENGINEERING PREPARATORY COURSE.

First Year.	1st Term.	2nd Term.
English 3	5	5
English 4	3	3
Mathematics 2	5	5
History 1	3	3
Drawing 1	2	2
Military Drill	1	1
	19	19

Second Year.	1st Term.	2nd Term.
English 5	5	5
Mathematics 3	5	5
Animal Biology 1	2	2
History 2	3	3
Carpentry 5	2	Forging 4 a 2
Military Drill	1	1
	18	18

PREPARATORY COURSE.

	1st Term.	2nd Term.
English 1	5	5
Mathematics 1	5	5
Geography 1	5	5
English 2	5	5
Penmanship	2	2
Physical Culture Military Drill	1	1
	23	23

WINTER COURSE IN AGRICULTURE.

This course of study is composed of elective work, the student being allowed, with the approval of the professors in charge, to select those studies in which he has the greatest interest:

Agronomy.
Agricultural Chemistry.
Animal Industry.
Dairying.
Entomology.
Horticulture.
Poultry.
Veterinary Science.

Departments of Instruction.

AGRONOMY.

ASSISTANT PROFESSOR MERRILL.

1. ELEMENTARY AGRICULTURE. This course is intended to show the relation of the natural sciences to agriculture and explain how these facts may be applied in farm practice. Special attention is given to the problems in agriculture peculiar to the arid region. The work is designed to give young men who remain at the College but a short time an idea of the importance and value of agricultural pursuits. Required of all first year students in agriculture. Three hours a week during the first term. T., F., S., at 9.

2. RURAL ENGINEERING. The course of instruction included under this head embraces the subjects of irrigation, drainage, buildings and fences, and machinery. Required of all second year students in agriculture. Three hours a week during the first term. T., Th., S., at 10:40.

(a) *Irrigation:* In this course the subject is studied with reference to its history, its different methods, the time of application of water, and the water requirements of different crops. Students have excellent opportunities to study the work in irrigation at the Experiment Station.

(b) *Farm Drainage:* A study is made of the practical effects of drainage, land needing drainage, and of the different problems involved in laying out and putting in a system of drains.

(c) *Buildings and Fences:* The arrangement, design, location, and cost of farm buildings is explained; fences and gates—their necessity, cost, kinds, and construction; wood for gates and fences—time to cut, conditions favorable to decay, and methods of preservation; discussion of fence laws.

(d) *Farm Machinery:* Attention is given to the tools and machinery of the farm—hoes, spades, plows, harrows, cultivators, rollers, planters, cutters, grinders, mowers, rakes, binders, wagons, etc.; their development, design, construction, draft, efficiency, durability, and care. The department has a large collection of lantern slides which are used in illustrating this subject.

3. SOILS AND FARM CROPS. This course is required of all third year students in agriculture. Five hours a week during the second term. Daily, at 10:40.

(a) *Soils:* The origin, composition, and physical and chemical properties of soils receive attention; different methods of treatment are examined, and the influence of these methods upon moisture, texture, fertility, and production; soil texture as affecting capillarity, osmosis, and diffusion, and as affected by cultivation and cropping. Special attention is given to the preservation of original soil fertility and the reclamation of alkali soils; and a general discussion of the proper use of different kinds of manure is presented. These lectures are supplemented by laboratory work, comprising the determination of the specific gravity of different soils, their water holding capacity, their adhesive and cohesive qualities, their capillary power, etc.

(b) *Farm Crops:* This is a study of the conditions of germination and growth and the circumstances modifying these conditions; the selection of crops for Utah; the system of rotation best adapted to the state, taking into consideration the distribution of labor, the production of manure, and the extermination of weeds; summer fallow; and the management of meadows and pastures. The laboratory and field work consists of a study of the vitality of seeds and their preservation. The student makes observations, on the farm, on the habits of growth of the different farm crops.

4. SOIL PHYSICS. This work is intended for students wishing to specialize further along the lines of soil study, and must be preceded by Agronomy 3. It includes the determination of temperature, moisture, and soluble salt content of various soils under field conditions; the effect of subsoiling and various methods of tillage upon soil moisture and plant growth; the effect of different crops upon the soil and upon succeeding crops; the effect of special and general farming upon the productive capacity of soils. Required of all students in agriculture who elect Agronomy as a major. Three hours a week during the second term of the junior year.

5. AGRICULTURAL EXPERIMENTATION. In this course students have access to the Experiment Station library, and make a study of the work of experiment stations and experimenters in this and other countries. The students are required to make abstracts of a sufficient number of of bulletins, bearing on a selected line of work, to become familiar with their scope and aim. Required of all students in agriculture electing Agronomy as a major. One hour a week throughout the junior year.

6. RURAL ECONOMICS. Required of all students in agriculture electing a major in Aronomy. Three hours a week during the first term of the senior year.

(a) *History of Agriculture:* The course covers the general development of the agriculture of those nations which have contributed most to agricultural progress. The development of Roman agriculture is specially emphasized influencing as it has the agricultural practices in other nations.

(b) *Farm Management:* This course includes a discussion of special and general systems of farming, of different systems of rotation, laying out and improving farms, economic bestowal of labor, and the profitable use of machinery.

ANIMAL INDUSTRY.

PROFESSOR LINFIELD.
ASSISTANT PROFESSOR DRYDEN.

1. ANIMAL TYPES. The aim of this course is to study the qualities of the animal as indicated by the external form. The work also includes practice in keeping score cards and in handling the stock upon the College farm. Craig's *Market Types.* Required of all first year students in agriculture. Three hours a week during the first fourteen weeks of the second term. T., F., S., at 9.

2. GENERAL COURSE. This course consists largely of lectures illustrated by charts, photographs, and lantern slides. It includes a brief study of the history and characteristics of those breeds of live stock best adapted to Utah conditions; the laws of heredity; the feeding and management of different kinds of live stock; the selection and judging of live stock; compiling and study of pedigrees. Required of all third year students in agriculture. Three hours a week during the first term. T., Th., S., at 10:40.

3. PRINCIPLES OF HEREDITY. This course includes a study of the laws of heredity, law of correlation, reversion, variation, fecundity, the methods of breeding, crossbreeding, in-and-in breeding, selection. These laws are practically illustrated by their application to the improvement of the live stock on the farm. Practical work is given in the study of herd books, tabulation of pedigrees, and such other exercises as enable the students to learn the value of a pedigree, and how to keep the records of

any breeding herd. The crops, live stock, and poultry on the College farm are available for study and illustration. Elective to juniors in agriculture. Two hours a week during the first term.

4. BREEDS AND BREEDING. The object of this course is to show the zoological relation of our domestic animals to the rest of the animal kingdom, emphasizing the principles illustrated in their development into specialized animals; and to study the different breeds of horses, cattle, sheep, and swine for the purpose of learning their qualities, characteristics, and adaptabilities. Elective to juniors in agriculture. Two hours a week during the first term.

5. STOCK FEEDING. This is a study of the principles underlying the profitable feeding of animals; the composition of plants, animals, and animal products. A study is made of the practices which give best results, as indicated by available data, gathered from the work of experiment stations in this and other countries. Special attention is devoted to the study of Utah conditions in the handling of live stock. The hygiene, care, and management necessary to successful feeding are also studied. In connection with this course the live stock, farm buildings, and other equipment are available for practice and advanced study. Elective to seniors in agriculture. Four hours a week during the second term.

6. DAIRYING. Required of third year students in agriculture. Two hours a week during the first term. W., F., at 10:40.

(a) *Milk.* This course includes a thorough study of the methods used in testing, buying, and preserving milk for food or manufacturing purposes. The farm problem of milk production is studied in connection with the management of dairy cows.

(b) *Butter:* Factory and hand methods in butter production, creaming of milk by different methods, handling and ripening cream, churning, salting, working, packing, and marketing are studied. The work of the class room is illustrated and applied in the College dairy.

(c) *Cheese:* The process of Cheddar cheesemaking is emphasized. The principles and practice necessary to make a uniform product and to overcome characteristic difficulties are described and illustrated in the class room and dairy. The methods of manufacture of other kinds of cheese, particularly of such kinds as may be made at the home dairy, are also studied.

7. ADVANCED DAIRYING. This course consists of a study of special dairy problems, and of experimental work in handling dairy products. Elective to students who have completed Course 6, and Animal Biology 8. Three hours a week during the second term.

8. POULTRY MANAGEMENT. This course includes a study of breeds of poultry, poultry buildings, feeding and management, and the practical operation of incubators and brooders. Required of all first year students in agriculture. Three hours a week during the last four weeks of the second term. T., F., S., at 9.

9. BREEDS OF POULTRY. This course is a more extended study of breeds, breeding, and types, including a study of the American Standard of Perfection, and practice in judging; rations; the best methods of handling for specific purposes; natural and artificial incubation; poultry diseases; buildings and appliances; and the practices of successful poultry keepers. Required of all third year students in agriculture. One hour a week during the first term. W., at 9:50.

10. POULTRY EXPERIMENTS. In this course special work is offered to those who wish to specialize in this branch of animal industry. The time of the student is devoted largely to assisting in experimental work and recording his observations on the same. Elective to students taking a major in Animal Industry. Three hours a week during the second term of the senior year.

11. THESIS. In their thesis work, students are allowed

to experiment with any of the live stock on the College farm, with poultry, or in the dairy work. Required of students who elect Animal Industry as a major. One hour a week during the senior year.

12. WINTER COURSE. Students who take the winter course in Animal Industry are given the work covered by courses 1 and 2, but in a briefer and more elementary form. In dairying the work is about the same as in course 6 (a), (b), but is more elementary.

HORTICULTURE.

PROFESSOR CLOSE.

1. GENERAL HORTICULTURE AND ECONOMIC ENTOMOLOGY. The object of this course is to give the students as broad a grasp of these subjects from an economic standpoint as is possible in the time allotted to the work. Insect pests and plant diseases of the orchard and garden, together with remedies for each, are thoroughly discussed. Other phases of the work are, orchard management, cultivation, tree planting, pruning, location of orchards, and desirable varieties to be planted. Required of freshmen in agriculture. Three hours a week during the first term. (Also five hours a week to the winter course students in agriculture.) T., Th., S., at 9:50.

2. PROPAGATION AND CARE OF PLANTS. During the first term's work *Principles of Plant Culture*, by Goff, is used as a guide in the study of the principles underlying an intelligent understanding of the care, growth, and development of orchard and garden plants and trees. Instruction is also given in propagation by seeding, budding, grafting, layering, and by cuttings, and in the management of hot-beds and forcing houses. Required of seniors in agriculture who elect a major in Horticulture. Four hours a week during the first term.

3. POMOLOGY AND ORCHARD MANAGEMENT. In the second term the subjects of pomology and orchard management are taken up, including the choice of fruit lands, their cultivation, and the maintenance of fertility; the planting of orchards and other fruit plantations; choice of trees and selection of varieties; pruning; insect and fungus pests, and means of combating them. Required of seniors in agriculture who elect a major in Horticulture. Four hours a week during the second term.

4. LANDSCAPE GARDENING AND FORESTRY. Following the history of gardening, the practical side of ornamenting private and public grounds is taken up. This includes the making of lawns, drives, and flower and shrubbery beds; sodding, tree planting, etc. The native trees of Utah, together with desirable trees for introduction, are studied under the head of forestry. Required of seniors in agriculture who elect a major in Horticulture. Three hours a week during the first term.

5. VEGETABLE GARDENING. The special requirements of the different vegetables both in the garden and in the forcing house are discussed. Green's *Vegetable Gardening*. Required of seniors in agriculture who elect a major in Horticulture. Three hours a week during the second term.

6. FLORICULTURE. This course deals with the propagation and care of house plants, the planting and care of the flower garden, and home grounds. So far as possible, the work of the class room is supplemented by actual practice in the conservatory and on the College grounds. Taft's *Greenhouse Management*. Required of sophomore students in the Domestic Science Course. Three hours a week during the second term. T., Th., S., at 9.

7. THESIS. As far as possible the thesis work must show result of original investigation by the student under the direction of the Horticulturist. Required of seniors in agriculture who elect a major in Horticulture. One hour a week throughout the year.

BOTANY.

PROFESSOR CLOSE.

1. STRUCTURAL AND SYSTEMATIC BOTANY. The aim of the work in structural and systematic botany is to help students to become familiar with the higher plants, the terms used in describing them, and their classification. Students are provided with microscopes and dissecting instruments for laboratory work, but must furnish their own collecting and mounting outfits. Fifty mounted and named plants are required. Gray's *Lessons in Botany*. Required of second year students in the Agricultural and Domestic Science courses. Three hours a week during the second term. T., Th., S., at 10:40.

2. PHYSIOLOGICAL BOTANY. Plant anatomy and the functions, growth, and nutrition of plant organs are studied. All laboratory equipment and materials are furnished. Bessey's *Essentials in Botany*. Required of sophomores in the Agricultural and Domestic Science courses; elective to others. Five hours a week during the first term. Recitations, T., Th., S., at 9; laboratory, W., F., from 2 to 3:40.

ENTOMOLOGY.

PROFESSOR CLOSE.

1. GENERAL ENTOMOLOGY. In this course students are expected to acquire a general knowledge of the structure and classification of insects, especially the common insect pests. Insecticides and methods of applying them are given some consideration. Smith's *Economic Entomology*. Required of seniors in the Agricultural and Domestic Science courses; elective in the General Science Course. Two hours a week during the second term.

VETERINARY SCIENCE.

ASSISTANT PROFESSOR MERRILL.

1. WINTER COURSE. During the winter months, beginning with the opening of school after the holiday recess, a course of thirty lectures is given on the science of health preservation of domestic animals. Some of the more common diseases and ailments are discussed. Attention is given to ideal sanitary conditions for different animals; and common errors are pointed out and corrections suggested.

2. ELEMENTARY COURSE. This subject is taught by lectures and text books on the diseases of domestic animals, and is illustrated by observation and practice at the free clinics. Part of the term is given to the study of the diseases and conditions that require surgical treatment—such as lameness, wounds, abscesses, tumors, and the like. A few lectures are given in which the various methods and principles of shoeing are discussed, as well as the proper treatment of the horse's foot. Required of all third year students in agriculture. Four hours a week during the second term. T., W., Th., F., at 12:20.

3. VETERINARY ANATOMY. This subject is taught in part by lectures, and is illustrated by charts, skeletons, etc. During this term there is a complete dissection of a horse. Required of students electing Animal Industry as a major, and elective to students in the General Science Course. Four hours a week during the second term of the junior year.

4. VETERINARY MEDICINE. This subject includes therapeutics and materia medica. Students are instructed in the compounding and administering of medicines. The course must be preceded by Veterinary Science 3. Finlay Dun's *Materia Medica* is used as a text book. Required of students who elect Animal Industry as a major. Four hours a week during the first term of the senior year.

5. THE FREE CLINIC. Every Monday during the

second term clinics are held to which diseased animals are brought for free treatment. Students are required to assist in the work and perform such operations as they are prepared for. Required of students taking any of the courses in Veterinary Science.

DOMESTIC SCIENCE.

PROFESSOR COTEY.
MRS. COOK.

The purpose of the following courses is to give instruction and practice in those subjects most intimately associated with the daily life of women at home.

I. HOUSEHOLD SCIENCE.

PROFESSOR COTEY.

1. LAUNDERING. The work consists of practice alternating with lectures. The practice includes plain white washing and removing stains, clear starching, best methods of doing up fine mull, of ironing shirts, cuffs, and collars, washing flannels, and cleaning silk and fine woolen goods. The lectures treat of the chemistry of the various materials used, and of hard waters and the process of softening them. Soaps, washing fluids, bleaching powders, bluings, and starch, are discussed in their scientific and practical relations to laundry work. Required of second year students in the Domestic Science Course, and in the Manual Training Course in Domestic Arts. Two hours a week during the first third of year. W., F., from 2 to 3:40.

2. COOKING I. The student receives instruction in selecting different cuts of meats and in the methods of cooking best adapted to them. Practice is given in roasting, braizing, broiling, in stews and pot roasts; in preparing fowls for cooking, and in making dressings; in

boning, larding and skewering, in making croquets, scallops, etc. Instruction is given in preparing soup stocks, in making cream soups, vegetable soups, and purees. Students are taught to prepare sauces suited to different kinds of meats and to make various meat pies, dumplings for stews, and noodles for soups. Required of second year students in the Manual Training Course in Domestic Arts. Two hours a week during the second third of year. Daily at 12:20.

3. COOKING II. Instruction is given in the making of various kinds of yeast, salt rising, wet and dry yeast; white and graham bread, corn bread, Boston brown bread; many varieties of rolls and buns. This work includes lessons in making baking powder and in making a great variety of the breakfast breads in which it is used; biscuits, muffins, gems, Johnny cake, pancakes, and waffles. Part of the term is devoted to plain pastry cooking. Required of second year students in the Manual Training Course in Domestic Arts. Two hours a week during the last third of year. W., F., from 2 to 3:40.

4. COOKING III. Practice is given in making a variety of layer and loaf cakes, sponges, cream puffs, cookies, jumbles and fancy cakes, plain pastry, puff paste, tarts, patties, etc. The student is also given practice in a great variety of baked, boiled, and steamed puddings; custards, blancmanges, whips, creams, jellies, etc. Instruction is given in laying tables for dinner and lunch parties, and in waiting on tables. A few lessons are given in making taffy and sugar candies with French cream fondant. The work includes instruction in cooking vegetables and serving dinners during both winter terms. Required of third year students in the Manual Training Course in Domestic Arts. Two hours a week during the last two thirds of year.

5. FRUIT WORK. This includes canning by various methods, and making all kinds of preserves and marmalade; different methods of making jellies, and experiments

with green and ripe fruits; the making of all kinds of ketchups, spiced fruits, sweet and sour pickles, table sauces and meat relishes; the preparing of fruit juices, cordials and syrups. The latter part of the term's work is a course of lectures on the chemical nature of fruit, its acids and sugars; the value of fruit as food, and its action on the human system; the causes of fruit fermentation, and a study of antiseptics. Young women doing this work are required to make use of reference books in the library, and to write essays upon the food value of fruit. Required of third year students in the Domestic Science Course, and in the Manual Training Course in Domestic Arts. Two hours a week during the first third of year. T., Th., from 2 to 3:40.

6. FOODS. Foods are studied as to their sources, processes of manufacture, conditions in which they are found in the market, and methods of cooking best adapted to each. Talks are given on marketing and the selection of foods, and their care before cooking. Sanitary conditions of the kitchen and store rooms are discussed. General rules of measuring and mixing food materials and their proper proportions and combinations are taught, along with the best methods of baking and boiling; deep and shallow frying; carving and serving food. The principles taught in the class are put into practice by each student in the kitchen. Required of second year students in the Manual Training Course in Domestic Arts. Four hours a week throughout the year. Daily, at 9.

7. SANITATION AND HYGIENE. The lectures on these subjects treat of sanitary conditions about the home; dangers from damp and unclean cellars, foul drains and sinks; ventilation, heating and lighting; instructions especially necessary to women on the care of personal health; home nursing, with illustrative lessons on changing beds for the sick. Required of third year students in the Manual Training Course in Domestic Arts. Two hours a week throughout the year.

8. HOME NURSING AND FIRST AIDS TO INJURED. These subjects are taught by lectures and enforced by illustrations, with references to such authorities as Park, Wilson, Nightingale, Stoney, Hampton, Shaw, Canfield, and Stockholm. Required of third year students in the Domestic Science Course. Five hours a week during the first third of year. Daily, at 9:50.

9. COOKING IV. The purpose of this course is to give instruction in the best methods of selecting, preserving, and cooking all common food materials. All principles learned in the class room are demonstrated in the kitchen. William's *Chemistry of Cookery*, Richard's *Chemistry of Cooking*, and various bulletins issued by the United States Government are used as texts. Required of third year students in the Domestic Science Course. Five hours a week during second third of year. Daily, at 9:50.

10. COOKING V. This course includes all kinds of plain and some fancy cooking, and covers in a general way all the subjects with which a housekeeper in moderate circumstances needs to be familiar. Demonstration lessons are given at various times throughout the term, on subjects difficult of treatment in the general practice. A three-course lunch is served daily during the winter months. Members of the class take turns in presiding as hostess at the table, carving and serving plates and looking after the needs of the guests; they also take turns in waiting upon the table. The confidence and skill thus acquired are invaluable to them. Required of third year students in the Domestic Science Course. Two hours a week during the second third of year. T., Th., from 2 to 3:40.

11. THE SCIENCE OF NUTRITION. This is a study of foods, their chemical composition, characteristics, digestibility; the way in which they nourish the body; the effect of age, climate, and occupation on the amount and kind of food required. Books on food by such authors as Yeo,

Smith, Sir Henry Thompson, Green, Atkinson, Youmans, Parks, and Hoy are used for reference. Constant use is made of government bulletins on the composition and digestibility of foods. A full set of charts and bottles illustrating the composition of food are used as aids to the study. Required of third year students in the Domestic Science Course. Five hours a week during the last third of year. Daily, at 9:50.

12. DIETETICS AND INVALID COOKING. The course aims to determine the best foods to be given in diseases, with practice in their preparation and serving. The preparation of liquid diet, light diet and convalescent diet is taught the same as in hospital training schools. *Invalid Cooking*, by Mary Boland; *Food in Diseases*, by Yeo; *How to Feed the Sick*, by Dr. Gatchell, and other similar works, are used as texts. Required of third year students in the Domestic Science Course. Two hours a week during the last third of year. T., Th., from 2 to 3:40.

13. SANITATION. The course embraces a study of the conditions necessary to a healthful home—fresh air, pure water, heating, lighting, and drainage. *Household Sanitation*, issued by the Collegiate Alumni Association, is used as a text book, together with the *Sanitarian*. Reports of various boards of health are used as reference books. Required of seniors in the Domestic Science Course; elective to others who have had course 12. Five hours a week during the first term.

14. HOUSEHOLD ECONOMICS. Lectures are given on the convenient arrangement and economical furnishing of rooms; the best methods of doing all kinds of housework, with a view to economy of time and strength; the duties of mistress and servants; the entertainment of guests; and many other subjects of interest to the home-maker. Books by prominent writers on these subjects, and a number of periodicals of especial value to students of the class, are found in the library. Required of seniors in the Domestic

Science Course; elective to others who have completed Course 13. Five hours a week during the second term.

II. SEWING.

MRS. COOK.

Besides the general advantages derived from industrial education, the object of this branch is to give a practical training in the sewing which every household requires. Neatness of work is insisted upon. The student provides material and makes her own garments.

1. HAND STITCHES. During the first part of the first year, the student makes a set of models, covering the full course in hand sewing, and involving practice in basting, overhanding, overcasting, backstitching, hemming, felling, gathering and stroking gathers, gusset, buttonholes, loops, eyelets, patching, darning, blanket stitch, slip stitch, blind stitch, herring bone stitch, feather stitch, chain stitch, French hem, French seam, etc. Talks are given on the position of the body and the care of the eyes while sewing, on color, and on the nature and manufacture of materials used. Required of first year students in the Domestic Science Course, and in the Manual Training Course in Domestic Arts. Two hours a week during the first term in the Domestic Science Course, and three hours a week during the first third of year in the Manual Training Course in Domestic Arts. In the Domestic Science Course, daily at 10:40; in the Manual Training Course in Domestic Arts, daily, from 2 to 3:40.

2. MACHINE WORK. The student is taught the use and care of various machines. Regular practice is given in running, hemming, felling, gathering, puffing, tucking, quilting, etc. Drawers, skirt, and underwaist are cut and made. Required of first year students in the Domestic Science Course and in the Manual Training Course in Domes-

tic Arts. Two hours a week during the second term in the Domestic Science Course, and three hours a week during the second third of year in the Manual Training Course in Domestic Arts. In the Domestic Science Course, daily, at 10:40; in the Manual Training Course in Domestic Arts, daily, from 2 to 3:40.

3. MACHINE AND HAND WORK. The student is taught to cut from a pattern made for each pupil, according to the system used throughout the course, and to fit and finish a dress of washable material; also to cut, fit, hang, and finish one lined skirt of worsted material. Required of second year students in the Domestic Science Course, and of first year students in the Manual Training Course in Domestic Arts. Two hours a week during the second third of year in the Domestic Science Course, and three hours a week during the last third of year in the Manual Training Course in Domestic Arts. In the Domestic Science Course, W., F., S., at 10:40, and T., Th., at 12:20; in the Manual Training Course in Domestic Arts, daily, from 2 to 3:40.

4. DRESSMAKING. The students are taught to adapt and use patterns, and to make use of dress cutting systems, in draughting, cutting, fitting, and making a worsted dress and fancy waist. Required of second year students in the Domestic Science Course and in the Manual Training Course in Domestic Arts. Two hours a week during the last third of year in the Domestic Science Course, and three hours a week during the first term in the Manual Training Course in Domestic Arts. In the Domestic Science Course, W., F., S., at 10:40, and T., Th., at 12:20; in the Manual Training Course in Domestic Arts, daily, from 9:50 to 11:30.

5. DESIGNING, CUTTING, AND FITTING. Instruction is given by talks on grace in the design of costume, and in harmony of color. Further practice is given in cutting, and fitting. Required of second year students in the Manual Training Course in Domestic Arts. Three hours a week during the second term. Daily, from 9:50 to 11:30.

6. ADVANCED DRESSMAKING. Further work is done in practical costume making, cutting, basting, fitting, pressing, trimming, and finishing. Draughting from measurements, patterns for waists, skirts, sleeves, princess gowns, jackets, coats, etc., forms a large part of the work. Required of third year students in the Manual Training Course in Domestic Arts. Three hours a week during the first term.

7. FANCY WORK. This consists of hemstitching, drawn work, Kensington embroidery, Roman cut work, Spanish laid work, jeweled embroidery, Bulgarian embroidery, and modern lace making. Required of third year students in the Manual Training Course in Domestic Arts. Three hours a week during the second term.

COMMERCE.

PROFESSOR FARIS.
ASSISTANT PROFESSOR ROBINSON.
MR. NORTON.

1. BOOKKEEPING I. Required of first year students in the Commercial Course. Two hours a week throughout the year. Daily, at 10:40.

(a) *Science of Accounts:* The course of instruction in the science of accounts embraces a careful study of the fundamental principles of bookkeeping. The principles of debit and credit are thoroughly developed by means of repeated drills and lectures. Journal and day-book entries are given careful attention. Much care and practice in penmanship, ruling, spacing, arrangement of work, etc., with special reference to figures, is exacted, thus giving students, in addition to principles on which the work is based, that manual training necessary for neat, accurate and rapid bookkeeping.

(b) *Practical Bookkeeping:* In this work a regular laboratory method is used. Each student assumes the responsibility of a bookkeeper, and actually keeps books according to the shortest and most approved methods in various kinds of business—such as grocery, general merchandise, jobbing, commission, etc.—including a thorough course in corporation work. College currency, bills of exchange, notes, checks, deeds, leases, mortgages, receipts, invoices and all other forms of commercial paper incident to the several kinds of business are used. All banking is done directly with the college bank. The work is largely individual, and may be so arranged that no two students will arrive at the same result. Every step in the progress of a student is carefully examined, and by a rigid system of checking accuracy is exacted.

2. BOOKKEEPING II. Optional with Stenography I to second year students in the Commercial Course. Three hours a week throughout the year. Daily, from 2 to 3:40.

(a) *Business Practice:* Students form a business community, and each one not only keeps books but conducts and manages a business. All transactions are made either by correspondence or face to face with members of the class. Well furnished offices are run for the accommodation of the business circle. Students conduct the several offices, first as bookkeepers and then as managers. Careful attention is paid to the laws of Utah, and all business forms and transactions are made to conform to the statutes of the state. Among other features a corporation is organized and conducted as a General Mercantile Co., complying strictly with the laws of the state governing such institutions.

(b) *Business Methods:* The fundamental principles of bookkeeping are here applied according to modern ideas of business, with its complex and exacting requirements. The subjects of banking, securities, exporting and importing, railroading, business correspondence and every day business transactions, are carefully examined from a practical point of view. Blanks and business forms of many kinds are placed in the hands of students for discussion and reproduction.

3. BOOKKEEPING III. The duties, qualifications and requirements of expert accountants, are carefully studied. Books suitable for different kinds of business with the most approved ruling, special columns, etc., are discussed. Much practical work is given in opening and closing sets of books used in various business enterprises. Optional with Stenography II to third year students in the Commercial Course. Two hours a week throughout the year. Daily, from 2 to 3:40.

4. COMMERCIAL CALCULATIONS. This consists of a review and drill on the fundamental principles of arithmetic, weights and measures, the metric system, percentage, profit and loss, commission, interest, discount, storage, equation of accounts, partnership settlements, and all problems that the average business man is called upon to solve. Short methods are studied, and practical devices presented. Required of second year students in the Commercial Course. Three hours a week throughout the year. T., F., S., at 12:20.

5. COMMERCIAL LAW. This embraces a study of the customs, law, nature, formation, operation, interpretation, and discharge of contracts; including agency, partnership, corporation, bills, notes and checks, purchase and sale of personal property, guarantee or suretyship, limitation of the time to sue, commission merchants and brokers, agreements for personal services, bailments, insurance, telegraphic communication, patents, copyright, trade marks, real estate conveyances, and the business and legal forms that are used to carry on trade. Required of third year students in the Commercial Course. Three hours a week throughout the year. T., Th., S., at 9:50.

6. COMMERCIAL GEOGRAPHY. The subjects of mathematical, physical, and political geography are briefly re-

viewed with particular reference to their relation to climate, productions, transportation, commercial centers, etc. The student makes a careful study of the principal countries of the world from which such staple articles of commerce as food, textile and mineral substances, metals, and manufactured products are obtained. Internal and ocean communications with reference to seaport cities and markets are emphasized. There is no subject connected with commerce more interesting than commercial geography. It is a live subject, and any one who reads, sees, and thinks will not want for material to assist in making the subject attractive and beneficial. Required of third year students in the Commercial Course. Two hours a week throughout the year. W., F., at 9:50.

7. BUSINESS CUSTOMS. The fundamental principles of account keeping are applied in this course by means of practical work in the use of different forms and blanks pertaining to actual business. Instruction and practice are given in simple bookkeeping as related to farm accounting, in the principles of banking, in the use of notes and checks, in ordinary commercial law, such as leases, contracts, and papers commonly used, with special reference to marketing farm products and buying farm supplies, including actual experience in following market fluctuations, studying crop reports and results, from the standpoint of cause and effect. Required of third year students in the Agricultural Course. Three hours a week during the second term. Daily, at 9:50.

8. HISTORY OF COMMERCE. The purposes of this course are to convey a general knowledge of the origin and early development of commerce; to trace its influence on the world's civilization; to show the effects of great discoveries, inventions, public works, legislative enactments, and other important influences by which the progress of commerce has been effected. A thorough research of the commercial history of our own country is required. Special stress is placed on the consular system and com-

mercial relations of the United States. The student is led to a clear understanding of the beginning of commerce as the inevitable outcome of man's needs and desires. Required of sophomores in the Commercial Course. Three hours a week during the first term.

9. CONSTITUTIONAL AND INTERNATIONAL LAW. In this course, after a review of civil government, a study is made of the leading cases of constitutional law that have been passed upon by the Supreme Court of the United States. The great debates pertaining to the Constitution and the opinion of the constitutional lawyers are read and discussed. Students are lead to investigate the relation that our government bears to other governments of the world. The rights and duties of nations as independent political communities, and a systematic outline of the existing rules of international conduct, by which the harmony of the national state-system of Christendom is maintained, are made a prominent feature of the course. Required of sophomores in the Commercial Course. Three hours a week during the second term.

10. TRANSPORTATION. This subject deals with those questions of railroad, canal, river, lake, and ocean transportation which have become matters of public concern. The history and management of railroads, canals, and steamship lines is given careful attention. The effect of improved methods of transportation upon internal and foreign commerce is considered. Government ownership combinations, competition, legislation, and the policies pursued by other nations are given careful attention. Required of seniors in the Commercial Course. Five hours a week during the first term.

11. BANKING AND FINANCE. The theory of banking, ancient and modern, is first studied, after which a comparison is made of the system in use in the leading commercial nations. Crises and their causes are made a prominent feature of the course. Monetary units, coins, and coinage of different nations are discussed. A careful

study of the legislation of the United States Congress pertaining to finance and banking is made. Required of seniors in the Commercial Course. Five hours a week during the second term.

12. STENOGRAPHY I. This is an elementary course in the Gregg system of shorthand. The system is adapted perfectly to the hand, the shape of the characters being based upon movements common in ordinary handwriting. Other important features are, no position writing, no shading, and no detaching of vowels. These advantages enable the student to master the principles in a short time and to begin work from dictation early in the course. Business letters constitute the greater part of the dictation exercises. In addition to the regular class drill, individual instruction is given, enabling the student to work to the best possible advantage. *Gregg's Shorthand* and supplementary publications. Optional with Bookkeeping II to second year students in the Commercial Course. Three hours a week throughout the year. Daily, from 2 to 3:40.

13. STENOGRAPHY II. All the time allotted to this work is devoted to practice in writing and transcribing business letters, legal work, depositions, lectures, and general matter. The aim is to prepare students for positions as stenographers upon completion of the course. Musick's *Universal Dictation Course* and other works of reference. Optional with bookkeeping III to third year students in the Commercial Course who have completed Course 12. Two hours a week throughout the year. Daily, from 2 to 3:40.

14. TYPEWRITING. The work includes instruction in the care and mechanism of the typewriter; exercises in fingering; practice in writing business letters, legal forms, specifications, tabulated statements, and general work; and manifold writing. Three different kinds of machines are used, all having the "universal" keyboard. Required

of second year students in the Commercial Course. Two hours a week throughout the year. Two sections: section 1, daily, at 9; section 2, daily, at 9:50.

CIVIL ENGINEERING.

PROFESSOR SWENDSEN.
MR. BEERS.

1. SURVEYING. This course embraces the study of the general methods of farm, city, railway, topographic, and hydrographic surveying. The practical work in the field and drawing room receives particular attention. The advanced work of the course includes a treatment of the establishment of grades in railway and canal work, railroad curves, determination of the meridian, and triangulation and coordinate surveys. Raymond's *Plane Surveying*, and Searle's or Trantwine's field book. Required of sophomores in the Civil Engineering Course, and of seniors in the Agricultural Course who elect a major in Agronomy. Three hours a week throughout the year.

2. ROADS AND PAVEMENTS. The location, construction, and maintenance of country roads; the pavement of city streets, materials used and methods of construction. Byrne's *Highway Construction*. Required of juniors in the Civil Engineering Course. Five hours a week throughout the year.

3. HYDRAULICS. A thorough study of the theories of hydraulics; the flow of water through orifices, weirs, pipes, and open channels; measurement and division of water; and the theories of hydrodynamics and hydrostatics. Merriman's *Hydraulics*. Required of juniors in the Civil Engineering Course. Three hours a week throughout the year.

4. IRRIGATION I. The location, design, construction,

and operation of irrigation canals; design and construction of dams, reservoirs, head-gates, etc.; the duty of water, subdivision systems, and other subjects relating to irrigation systems. Required of seniors in the Civil Engineering Course. Three hours a week during the first term.

5. IRRIGATION II. This course deals especially with the problems in irrigation relating to the farm; the measurement and division of water, design of subdivision systems, methods of application of water. Required of seniors in the Agricultural Course who elect Agronomy as a major. Three hours a week during the second term.

6. WATER POWER. A general treatment of the theories of hydraulic motors. The development of water power, design and construction of penstocks, pipe lines, power houses, etc. Frizell's *Water Power*. Required of seniors in the Civil Engineering Course. Three hours a week during the second term.

7. WATER SUPPLY AND SEWERAGE. A detailed study of the questions pertaining to public water supplies, reservoirs, filtration, distribution systems, classes of water pipes, and the design of water supply systems. The course also includes a study of the problems relating to drainage, construction and capacity of sewers, and sewerage disposal. Fanning's *Water Supply Engineering*. Required of seniors in the Civil Engineering Course. Three hours a week during the first term.

8. HYDRAULIC LABORATORY. This course is intended to apply the theoretical work of courses 3, 4, 5, and 6 to practical problems; measurement of water, establishment of lines and grades for canals, aqueducts, and pipes; rating of meters; making of estimates, etc. Required of seniors in the Civil Engineering Course. Two hours a week throughout the year.

9. MASONRY STRUCTURES. This course includes a treatment of the materials used in masonry structures; a discussion of the theories relating to retaining walls, dams, arches, and other masonry structures. Baker's *Masonry*

Structures. Required of seniors in the Civil Engineering Course. Three hours a week during the second term.

10. THESIS. This usually consists of a report of the student's investigation in some special line of work connected with his course, or it may consist of a paper on some branch of civil engineering. It is expected to be a somewhat exhaustive treatment of the subject considered.

MECHANICAL ENGINEERING.

PROFESSOR JENSON.
MR. PULLEY.

1. ELEMENTS OF MECHANISM. This includes a consideration of the various forms of motion and its production; link motions, and their modifications as used in machinery; cam and wiper outlines; wheel trains and aggregate motions; design and construction of gear teeth; mechanism of special machinery. This subject deals with the purely geometrical relations of machinery, rather than with the form and design of articulating parts. Required of juniors in the Mechanical Engineering Course. Five hours a week during the first term.

2. ANALYTICAL MECHANICS. In this subject are treated the general laws of statics and dynamics as illustrated in the composition and resolution of forces, determinations of centers of gravity, moments of inertia, dynamics of a particle and of rigid bodies. Required of juniors in the Mechanical Engineering Course. Five hours a week during the second term.

3. APPLIED MECHANICS. This course begins with a discussion of the materials of engineering and their use in engineering structures, derivation of formulæ for stress in members, and a careful comparison with the results of experimental research in the strength of materials. This is followed by a study of stresses and strains in framed

structures, analytical and graphical methods being used in all cases. These are illustrated by complete analysis of roof and bridge trusses and modern high framed buildings. The subject is concluded with discussions of the continuous girder, the elastic arch, and the general theory of elasticity. Required of seniors in the Mechanical Engineering Course. Five hours a week throughout the year.

4. STEAM ENGINEERING. This begins with a study of the various forms of valve gears now in common use, which is followed by the study of the various forms of engines; the principles of thermodynamics according to the mechanical theory of heat and its application to the steam and other vapor engines, boilers and boiler design and construction; also methods of testing steam engines and steam boilers. A careful study is made of such data as have been secured from reliable tests in lieu of making actual tests. Required of seniors in the Mechanical Engineering Course. Three hours a week throughout the year.

5. MACHINE DESIGN. In this course are considered the effects of the moving parts of machinery; such as, the reciprocating parts of the steam engine, flywheels, governors, etc., and the general principles of design in machinery, carrying into effect the principles of the course in mechanism combined with those of the course in applied mechanics. The theory of design is supplemented throughout by the practical design of specific parts. Required of seniors in the Mechanical Engineering Course. Five hours a week throughout the year.

6. POWER. This course considers the sources of power, prime movers and their efficiencies, methods of distribution and transmission, with a careful study of losses due to friction, dissipation, etc., power measurement, and power absorption, by various methods of working machinery; also a careful study of lubricants and their

economy as such. Required of seniors in the Mechanical Engineering Course. Two hours a week throughout the year.

7. DYNAMO MACHINERY. This course consists of lectures and assigned readings on the theory and practice of dynamo construction, special attention being given to forms and systems now in use. Shop methods will be illustrated as far as possible. Required of juniors in the Mechanical Engineering Course. Three hours a week during the second term.

8. THESIS. In general a graduating thesis in this course should consist of the execution of an original design with a descriptive dissertation, or a discussion of some current engineering problem, or the result of some original research, experimental or theoretical. Required of seniors in the Mechanical Engineering Course. One hour a week throughout the year.

MECHANIC ARTS.

PROFESSOR JENSON.
MR. HANSEN.
MR. GRIFFIN.
MR. PULLEY.

I. CARPENTRY.

MR. HANSEN.

1. (*a*) Rudimentary exercises in sawing, ripping, planing, mortising, dovetailing, and the application of these to simple articles of furniture, furnish the details of this course. Correct methods of using and handling tools are emphasized. Required of all first year students in the Manual Training Course in Mechanic Arts. Five* hours a week during the first term. Daily, from 9:50 to 12:20.

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*In all the courses in Mechanic Arts, each hour's credit represents three hours work in the shops.

(b) Sharpening and adjusting carpenter's tools, and saw filing, followed by practice in making panels, doors, and sashes, and in sample cabinet work, constitute the work of this course. Open to first year students in the Manual Training Course in Mechanic Arts. Five hours a week during the second term. Daily, from 9:50 to 12:20.

2. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (b). Five hours a week throughout the year. Daily, from 9:50 to 12:20.

(a) Plain cabinet making, concluding with a standard carpenter's tool chest. First term.

(b) Wood turning and other machine work in wood. Second term.

3. In this course the principles and practice gained in the foregoing courses are applied to frame house building. If possible, practice in building a regular house is given; but when such opportunity cannot be had, small scale building is done at the shops. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (b), and preferably Course 2 (a). Five hours a week throughout the year. Daily, from 9:50 to 12:20.

4. In this course the student is allowed to specialize in cabinet making, including carving and fitting and finishing, or in inside finishing of houses, or special work in stair building. In whichever branch he may specialize he is required to finish a complete design. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 3. Five hours a week throughout the year. Daily, from 9:50 to 12:20.

5. This course consists of selected exercises from courses 1 (a) and 2 (b). Required of all second year students in the Engineering Preparatory Course and in the Agricultural Course. Two hours a week during the first term. T., Th., S., from 2 to 3:40.

6. This is an elementary course in pattern making.

Patterns of pipe fittings, groove pulleys, hangers, and core boxes are sample exercises of the course. Required of sophomores in the Mechanical Engineering Course; open to others who have completed Course 5. Three hours a week during the second term. Daily, from 2 to 3:40.

II. FORGING.

MR. GRIFFIN.

1. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1 in Carpentry. Five hours a week throughout the year. Daily, from 9:50 to 12:20.

(a) This course consists of preliminary exercises, such as drawing, bending, twisting, and shaping, followed by exercises in iron welding and making iron tools. Accuracy in methods and results is insisted upon. First term.

(b) The work of this course consists of practice in steel and iron welds, steel and steel welds and general work in steel tool forging and dressing. Chisels, punches, reamers, hammers, tin shears, nippers, etc., are sample exercises. Second term. Prerequisite, Course 1 (a).

2. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 1. Five hours a week throughout the year. Daily, from 9:50 to 12:20.

(a) This course consists of elementary work in horseshoeing and spring building, and in making and repairing different kinds of agricultural and other implements. First term.

(b) The work of this course consists of filing, chipping, hand fitting, and polishing, and general vise work; also practice in special forms of forging, such as wicket gates, cultivator teeth and irons, etc.

3. The work of this course consists of practical carriage building. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Five hours a week throughout the year. Daily, from 9:50 to 12:20.

4. (a) The work of this course consists of selected exercises from Course 1. Required of second year students in the Engineering Preparatory Course. Two hours a week throughout the second term. T., Th., S., from 2 to 3:40.

(b) This course consists of selected exercises from Course 1 (a), followed by work in horseshoeing and in repairing agricultural implements. Required of second year students in the Agricultural Course. Two hours a week during the second term. T., Th., S., from 2 to 3:40.

III. MACHINE WORK.

PROFESSOR JENSON.
MR. PULLEY.

1. This course consists of selected exercises from Forging 1, the same as Forging 4 (a), followed by the vise work of Forging 2 (b). Open to first year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (a) in Carpentry. Five hours a week during the second term. Daily, from 9:50 to 12:20.

2. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1. Five hours a week throughout the year. Daily, from 9:50 to 12:20.

(a) This course consists of preliminary exercises in straight and taper turning, drilling, planing, and milling, accompanied by instruction in the care and use of machinery. First term.

(b) The work of this course consists of boring and chucking in the lathe, thread cutting, polishing, etc., and such other exercises on other machines as will be required in making shaft couplings, tap wrenches, etc. Second term.

3. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Five hours a week throughout the year. Daily, from 9:50 to 12:20.

(a) The work of this course consists chiefly of making taps, spiral drills, fluted reamers, and mandrils, with practice in finishing tempered articles on the universal grinding machine. First term.

(b) This course consists of the manufacture of parts of machinery, such as engine connecting rods. Second term.

4. The work of this course consists of practice in actual machine construction. Speed lathes and sensitive drills may be taken as sample exercises. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 3 (b). Five hours a week throughout the year. Daily, from 9:50 to 12:20.

5. This course consists of selected exercises from courses 2 and 3. Required of juniors in the Mechanical Engineering Course. Two hours a week throughout the year. T., Th., S., from 2 to 3:40.

ANIMAL BIOLOGY.

PROFESSOR GOWANS.

1. ELEMENTARY ANATOMY AND PHYSIOLOGY. The purpose of this course is to familiarize the student with the important principles of the science of physiology, and furnish a basis for the study of hygiene. The student is encouraged to make a practical application of the laws upon which his health and proper physical development de-

pend. Martin's *Human Body, Briefer Course.* Required of second year students in the Agricultural, Domestic Science, Commercial, and Engineering Preparatory courses; and of fourth year students in the Manual Training Course in Mechanic Arts. Two hours a week throughout the year. Two sections: section 1, recitations, W., F., at 10:40; laboratory, Th., from 12:20 to 2; section 2, recitations, T., Th., at 10:40, laboratory, S., from 12:20 to 2.

2. ZOOLOGY. The laboratory work consists of the dissection of a number of types, which are studied in considerable detail. The lectures and recitations are based upon the laboratory work and consider the important characteristics of the principle groups of animals, especially morphology and physiology, the principles of classification, and the general principles of zoology. Required of sophomores in the Agricultural Course; elective to others who have taken Course 1. Three hours a week throughout the year. Recitations, T., Th., at 9:50; laboratory, W., F., from 11:30 to 1:10.

3. GENERAL BIOLOGY. The lectures deal with some of the general principles of biology. The laboratory work during the first term consists of the detailed study of a few representative vegetal and animal organisms, and during the second term, of an introduction to practical normal histology and elementary embryology. This course must be preceded by Course 1, and either preceded or accompanied by Course 2. Required of those who elect a major in Biology, and as a prerequisite to courses 5, 6, and 7; elective to others. Five hours (two lectures and three laboratory periods) a week throughout the year.

4. ADVANCED PHYSIOLOGY. The subjects discussed are, the phenomena of life; the physiology of the cell; chemical composition of the body; the physiology of nutrition; irritability and contractility; physiology of the circulation; physiology of the nervous system and sense organs. The laboratory work is an introduction to experimental

physiology. Elective to those who have completed courses 1 and 3, and Chemistry 1. Three hours a week (lectures, conferences, and laboratory work) throughout the year.

5. HISTOLOGY. A minute study of the elementary tissues, excepting the nervous system. Some time in the beginning is devoted to the preparation of stains, hardening, fixing and other fluids, each student being required to prepare the reagents for his own use. A typical mammal is used for material. Prepared slides of human tissues are furnished the student. The course includes methods of fixing, decalcifying, staining, imbedding, sectioning, mounting, and drawing. Elective to those who have completed Course 3. Five hours a week during first term.

6. COMPARATIVE ANATOMY AND EMBRYOLOGY OF THE VERTEBRATES. This course is based upon Wiedersheim's *Comparative Anatomy of Vertebrates*, and Foster and Balfour's *Embryology*. The course aims to consider more thoroughly than is possible in Course 2 the subject of vertebrate zoology. Elective to those who have taken courses 2 and 3. The extent of this course will be arranged to suit the convenience of students.

7. NEUROLOGY. The course includes general histological technique, as in Course 5, and some special neurological methods not included in that course. (*a*) A study of the comparative structure of the brain and nervous system of the higher and lower animals; (*b*) histology of the nervous system and sense organs. Elective to those who have completed courses 3 and 5. Five hours a week during the second term.

8. BACTERIOLOGY. This course consists of a study of elementary technique; the non-pathogentic bacteria; the work on yeasts and moulds; and the examination of air, water, and soil. Required of juniors in the Domestic Science Course, of students in the Agricultural Course who elect a major in Animal Industry, and of students in

the General Science Course who elect a major in Biology; elective to others. Three hours a week during the first term.

9. PATHOGENIC BACTERIA. Required of juniors in the Domestic Science Course and of students in the General Science Course who elect a major in Biology; elective to others who have completed Course 8. Three hours a week during the second term.

10. SOIL BACTERIOLOGY. After considering the elementary technique, this course deals with the examination of soils. The nitrifying organisms and the relationship of bacteria to soil fertility are discussed. Required of seniors in the Agricultural Course who elect a major in Agronomy; elective to others. Three hours a week during the first term.

CHEMISTRY.

PROFESSOR WIDTSOE.
ASSISTANT PROFESSOR YODER.

1. GENERAL CHEMISTRY. Required of sophomores in the Commercial Course and of freshmen in all other courses. Five hours a week throughout the year. Recitations, T., Th., S., at 9; laboratory, T., Th., S., from 2 to 3:40.

(a) *Elementary Chemistry:* This course deals with the important facts and fundamental theories of chemistry, and with the applications of chemistry in the arts and manufactures. The laws of chemical combination; the writing of reactions, and the solving of stoichiometrical problems are given special, careful consideration. Students taking this course must also take courses 1 (b) and 1 (c).

(b) *Elementary Practical Chemistry:* This course supplements Chemistry 1 (a) and furnishes the necessary practical preparation for qualitative analysis. The non-metallic elements, mainly, are studied with reference to their combinations with each other; their reactions are verified, and the facts and theories of the lecture room are tested by experiments.

(c) *Qualitative Analysis:* This course runs parallel with and supplements the descriptive study of the metals and their compounds. Under the direction of the instructor the students apply with their own hands the reagents necessary to determine the composition and properties of chemical compounds. They thus gain a practical knowledge of the methods of chemical analysis and manipulation. Each student is required to analyze and report on a number of unknown substances. This work is deemed extremely important from an educational as well as from a practical point of view.

2. ORGANIC CHEMISTRY. This course consists of a brief survey of the more important reactions and compounds of the fatty and aromatic series of hydrocarbons and their derivatives, together with a full discussion of the nature and influence of molecular structure. Opportunity is given the student to prepare a number of organic compounds which illustrate in their preparation the methods of work of the organic laboratory. Required of juniors in the Domestic Science Course. Three hours a week throughout the year.

3. AGRICULTURAL CHEMISTRY. This course consists of lectures and assigned readings on the chemical problems of agriculture. The aim is to make the student familiar with our present knowledge of the composition of the plant; the sources of plant food; the composition of the animal; the principles of animal nutrition; and the chemical nature of soils, waters, dairy products, etc. In the laboratory are taught the methods of agricultural analysis. Required of juniors in the Agricultural Course. Three hours a week throughout the year.

4. CHEMISTRY OF FOODS AND COOKERY. In this course, foods and methods of cooking are studied experimentally,

with especial reference to human nutrition. The common foods, both animal and vegetable, are separated by physical and chemical means, into their constituents, after which the effects of different methods of cooking upon the various constituents are investigated. Wine, beer, tea, coffee, milk, and other drinks are also examined, and separated into their constituent parts. Spices and condiments are studied with the especial purpose of learning simple methods for the detection of the common adulterants. Some attention is also given to the effect of different kinds of heating apparatus upon the chemical changes that take place during cooking. Required of seniors in the Domestic Science Course; elective to others. Two hours a week throughout the year.

5. QUANTITATIVE ANALYSIS. This is mainly a laboratory course, giving the student practice in the typical methods of proximate and ultimate quantitative chemical analysis. It aims also to give, in familiar talks, a due appreciation of the importance of accuracy in chemical work, and of the relation of quantitative analysis to theoretical chemistry. After the necessary introductory practice, samples of waters, soils, ores, agricultural products, and foods are analyzed and reported upon. The work of the Experiment Station chemical laboratory furnishes a good opportunity for the study of methods of analysis. Elective to those who have completed Course 1.

6. RESEARCH WORK. The laboratories of the College and the Experiment Station are open to students, with the necessary preparation, who desire to pursue special independent studies in the domain of chemistry. The researches carried on by the chemical department of the Experiment Station are of great aid to students who are engaged in the solution of scientific problems. Elective to those who have completed courses 2 and 5.

GEOLOGY AND MINERALOGY.

MR. PETERSON.

1. GENERAL GEOLOGY. The instruction given is intended to familiarize the student with the physiographic changes now in progress and the agencies which produce them, with the origin and structure of the various materials composing the earth's crust, and with the chronological succession of the great formations. Work in paleontology with a careful study of the development of the continent from the earliest geological time comprises most of the second term's work. Several field trips are made for the purpose of demonstrating the principles of dynamical and structural geology and to collect and study some of the many fossils in which our ledges abound. Required of juniors in the Agricultural Course; elective to others. Three hours a week throughout the year.

2. STRUCTURAL GEOLOGY. The work in this course consists of a study of the earth's crust with respect to the actual arrangement of the materials composing it; the source, classification, and characteristics of stone, used as building material, with some stress laid upon stratification, cleavage, disintegration, etc., as it may affect the work of the engineer. Each principle is supplemented by field and laboratory work. Required of juniors in the Civil Engineering Course. Three hours a week throughout the year.

3. ECONOMIC GEOLOGY. The object of the ocourse is to give the students some idea of the mineral resources of the United States, together with the mode of occurrence and importance of the non-metallic materials of economic value. Much of the information is taken from the reports of the United States Geological Survey. Elective to students who have completed Courses 1 and 2, and Chemistry 1.

4. MINERALOGY. This course is a systematic study

of the common minerals with some of the general principles of ore deposition. Some stress is laid upon the minerals produced in the state. Blow-pipe analysis and determinative mineralogy constitute the laboratory work. Required of seniors in the Agricultural and Domestic Science Courses. Two hours a week during the first term.

5. ASSAYING. The dry and wet methods of assaying for the common metals are outlined, and much practice is given in the actual work with specimens from widely different localities. Elective to students who have completed or are taking Course 4.

METEOROLOGY.

ASSISTANT PROFESSOR DRYDEN.

1. METEOROLOGY. This course includes an elementary study of air pressure, humidity, temperature, rainfall, evaporation, wind velocity, theory of storms, methods of forecasting, and a general study of the United States Weather Service, with special reference to the relation of climate to health and to agriculture. The reading of the weather instruments in use at the College is made a part of the work. Required of sophomores in the Agricultural and Domestic Science Courses. Two hours a week during the second term. W., F., at 9.

[The College receives the telegraphic *weather forecasts* from the forecast official of the Department of Agriculture located at San Francisco. The forecasts are telegraphed each day (Sundays and holidays excepted) at government expense. The signal flags are displayed from the flagstaff of the College in full view of the valley below. These forecasts or warnings are of great value to the farming community. In 1893 the percentage of verifications of the forecasts of the Pacific coast division was 83.7. For Utah, which is part of this division, the percentage was likewise 83.7. Great value is placed upon these forecasts by the Department of Agriculture at Washington. From their timely warnings much property is saved both on sea and land. The Department considers that $10,000,000 is a conservative estimate of the value of property saved in 1895. Doubtless some means will be devised in the near future whereby these forecasts will be made more accessible to the farming community. An explanation of the flag signals is shown on the third page of the cover.]

PHYSICS.

PROFESSOR SNOW.

1. ELEMENTARY PHYSICS. The object of this course is to enable every student to obtain a practical acquaintance with laboratory methods of work, and with the elementary facts and laws which are the foundation of the science and physics. The lectures are illustrated by experiments performed by the instructor, and numerous problems are worked in and out of class. The laboratory work consists of about forty-five experiments, chiefly quantitative, performed by each student. Hall and Bergen's *Text Book of Physics.* Required of sophomores in the Domestic Science Course, and of freshmen in all other courses. Three hours a week throughout the year. Recitations, W., F., at 9; laboratory, W., F., from 2 to 3:40.

2. GENERAL PHYSICS. This is a more advanced course than Physics 1. Stress is laid on the subjects of mechanics, heat, and electricity. Hastings and Beach's *General Physics.* Required of sophomores in the Civil Engineering and Mechanical Engineering Courses; elective to others. Three hours a week throughout the year.

3. ELECTRICAL MEASUREMENT. This course is arranged for those students in the General Science Course who elect Physics as a major. Elective to students who have completed Course 2, and Mathematics 5. Three hours a week throughout the year.

4. THERMOMETRY AND PHYSICAL OPTICS. This course is arranged for those students in the General Science Course who elect Physics as a major. Elective to students who have completed Course 3 and Mathematics 5. Four hours a week throughout the year.

MATHEMATICS AND ASTRONOMY.

PRESIDENT KERR.
ASSISTANT PROFESSOR LANGTON.
MR. PETERSON.

The elective courses in mathematics are not all given each year, but vary from year to year to suit the convenience of students who desire to specialize in mathematical science. Any elective course not appiled for at the beginning of the year by at least three students properly prepared may not be given. If applied for by the requisite number of students, additional courses in quaternions, determinants, theory of equations, projective geometry will be given.

1. ARITHMETIC. This course consists of a thorough threatment of elementary arithmetic, based on Cook and Cropsey's *Lessons in Arithmetic*, supplemented by many practical problems. Required of all students in the Preparatory Course, and of first year students in the Manual Training courses in Mechanical Arts and Domestic Arts. Five hours a week throughout the year. Four sections: section 1, daily, at 12:20; section 2, daily, at 2; section 3, daily, at 9; section 4, daily at 9:50. Mr. Peterson.

2. ARITHMETIC AND ALGEBRA. Required of second

year students in the Manual Training Course in Mechanic Arts, third year students in the Manual Training Course in Domestic Arts, and first year students in all other courses. Five hours a week throughout the year. Four sections: section 1, daily, at 10:40, Assistant Professor Langton; section 2, daily, at 9, and section 4, daily, at 2, Professor Gowans; section 3, daily, at 9:50, Assistant Professor Merrill.

(a) *Advanced Arithmetic:* Special attention is given to the nature, origin, and development of number. The class recitation hour is devoted to thorough consideration of the fundamental processes of arithmetic, including contracted methods of multiplication and division, common and decimal fractions, factors and multiples, mensuration, the metric system of weights and measures, square and cube root, proportion, percentage and interest, and practical problems. Wells's *Academic Arithmetic.* First term.

(b) *Algebra:* This course includes a thorough treatment of the fundamental operations, use of parentheses, factoring, highest common factor, lowest common multiple, fractions, and simple equations. Wells's *Essentials of Algebra.* Second term.

3. ALGEBRA, GEOMETRY. Required of third year students in the Commercial Course and the Manual Training Course in Mechanic Arts, and of second year students in all other courses, except the Manual Training Course in Domestic Arts. Five hours per week throughout the year. Two sections: section 1, daily, at 9:50; section 2, daily, at 9. Assistant Professor Langton.

(a) *Higher Algebra:* After a brief review of the subjects treated in course 2 (b), the following subjects are considered: Simple equations, inequalities, involution and evolution, theory of exponents, radicals, quadradic equations, ratio and proportion, progressions, and binomial theorem. Wells's *Essentials of Algebra.* First term.

(b) *Plane Geometry:* This course includes the general properties of regular polygons, their construction, perimeters, and areas; regular polygons and circles, with problems for construction; maxima and minima; and methods for determining the ratio of the circumference to the diameter. Wells's *Plane Geometry*. Second term.

4. GEOMETRY, ALGEBRA, TRIGONOMETRY. Required of sophomores in the Agricultural, Domestic Science, and Commercial courses; of freshmen in all other courses. Five hours a week throughout the year. Daily, at 12:20. Assistant Professor Langton.

(a) *Solid Geometry:* Philips and Fishers' *Geometry*. First third of year.

(b) *Advanced Algebra:* This course is based on Wells's *College Algebra*, and includes a thorough drill in the most important principles of higher algebra required in the engineering and other courses. Second third of year.

(c) *Trigonometry:* The deduction of general trigonometric formulæ, the solution of plane and spherical triangles, and practice in the use of logarithmic tables. Wells's *Trigonometry*. Last third of year.

5. ANALYTIC GEOMETRY, CALCULUS. Required of sophomores in the engineering courses; elective to others who have completed Course 4. Five hours a week throughout the year. Professor Snow.

(a) *Analytic Geometry:* The analytic geometry of the straight line, the circle, and the conic sections, including a discussion of the general equations of the second degree, and some special examples in transcendental and higher plane curves.

(b) *Differential Calculus:* The development of the fundamental principles and formolæ of the differential calculus; applications to various problems in plane geometry and analysis, such as indeterminate forms, maxima and minima, curvature, expansions of functions in series, evolutes and involutes, and curve tracing.

(c) *Integral Calculus:* Integration of various forms; development of the formulæ of the integral calculus; application in rectification of curves, quadrature of plane and curved surfaces, cubature of volumes, etc.

6. DESCRIPTIVE GEOMETRY. The representation of problems, and the solution of problems relating to geometrical magnitudes in space, including orthographic projections and development; projections of plane and solid figures; curved surfaces and tangent planes; shades and shadows; construction of maps; solutions of problems relating to geometrical magnitudes. Required of sophomores in the engineering courses. Two hours a week throughout the year. Professor Jenson.

7. DIFFERENTIAL EQUATIONS. This course is arranged to meet the special requirements of engineering students, and includes a treatment of the theory and methods of the solution of total differential equations, with a short introduction to partial differential equations. Required of juniors in the engineering courses. Three hours a week during the first term.

8. MODERN GEOMETRY. This course treats the most important theorems and examples connected with harmonics, anharmonics, involution, projection (including homology) and reciprocation, including the following: Harmonic ranges and pencils; conics and focal projections; anharmonic ratios; homographic ranges; anharmonic properties of points on a conic, of tangents of a conic; poles and polars, reciprocation; properties of triangles; Pascal's and Brianchon's theorems; homographic ranges on a conic; ranges and pencils in involution; involution of conjugate points and lines; involution range on the conic, of a quadrangle, of a quadrilateral; constructions of the first and second degree; the principle of continuity; circular points and lines; real and imaginary projection, generalization by projection, and homology. Cremona's *Projective Geometry*, Russell's *Treatise on Pure Geometry*, and Lachlan's *Modern Pure Geometry*. Elective to those who have completed Course 5. Five hours a week throughout the year.

9. PLANE AND SOLID ANALYTICAL GEOMETRY, ADVANCED COURSE. This course includes the equations and properties of the point, right line, and plane, of the sphere, cylinder and cone, and of the paraboloids, ellipsoids, and hyperboloids; the modern algebraical methods of the conic sections; a short discussion of the general theory of higher plane curves and surfaces; applications of the differential and integral calculus to problems involving functions of two or more variables, such as development in series and transformation of functions, curvatures, areas of surfaces, volumes of solids, etc. The work of this course will consist in the discussion of portions of Salmon's *Conic Sections*, *Higher Plane Curves*, and *Analytic Geometry of Three Dimensions.* Elective to students who have completed Course 5. Five hours a week throughout the year.

10. DIFFERENTIAL AND INTEGRAL CALCULUS, ADVANCED COURSE. This course embraces the elements of the theory of functions of imaginary variables; the various methods of integration, systematically treated; the elements of the theory of the elliptic functions; the mechanical and geometrical applications of the calculus treated more fully than in Course 5; and some of the more important cases of Differential Equations. Todhunter's *Differential Calculus* and Williamson's *Integral Calculus.* Elective to students who have completed Course 9. Five hours a week throughout the year.

11. HISTORY AND PHILOSOPHY OF MATHEMATICS. This course deals with the origin, development, and logical relation of the various subjects of mathematical science, including a series of synoptic lectures, which may be roughly outlined as follows: Mathematics among the ancients; Descartes and the discovery of analytic geometry; Newton, Leibnitz, and the calculus; Hamilton and the invention of quaternions; modern geometry; mathematics and mathematicians of the United States. Ball's *History of Mathematics*, Comte's and Bledsoe's *Philosophy of Mathematics*,

the *Encyclopædia Britannica*, and other works of reference. Elective to students who have completed Course 9. One hour a week throughout the year.

12. GENERAL ASTRONOMY. This course deals with the general facts and principles underlying the science of astronomy, with solutions of many problems, particularly those relating to the determination of latitude, longitude, and time. Instruction is given by means of recitations and lectures. Young's *General Astronomy*. Elective to students who have completed Course 4. Two hours a week throughout the year.

13. PRACTICAL ASTRONOMY. A continuation and completion of Course 12. Theory and use of instruments—sextant, transit instrument, zenith telescope, and equatorial; various methods of determining longitude and latitude; graphical methods of predicting eclipses, etc. Doolittle's *Practical Astronomy*; Clarke's *Geodesy*. Elective to those who have completed courses 5 and 12. Two hours a week throughout the year.

ENGLISH LANGUAGE AND LITERATURE.

PROFESSOR MACEWAN.
MR. CAINE.
MR. HILL.
MISS MOENCH.
MISS BAKER.

1. GRAMMAR AND COMPOSITION I. This work includes orthography; the parts of speech; the construction, analysis, and punctuation of easy sentences; the correction of common errors in language; and the writing of brief compositions. The written work is in part suggested by the text book, and in part correlated with the lessons in reading

and in geography. Hyde's *Lessons in English, Second Book.* Required of all preparatory students. Five hours a week throughout the year. Four sections: section 1, daily at 9:50, and section 4, daily at 2, Mr. Hill; section 2, daily, at 9, and section 3, daily at 12:20, Mr. Caine.

2. READING AND SPELLING. The following books are read: *The Lady of the Lake*, *The Sketch Book*, *The Vicar of Wakefield*, Pope's Homer's *Iliad, I, VI, XXII, XXIV*, *The De Coverly Papers*, *The Merchant of Venice*, *Silas Marner.* The purposes of the work are the acquisition of a vocabulary, a knowledge of the contents of the books, and correct oral expression. Written summaries and reproductions are required, and due attention is given to spelling. *Student's Series of English Classics; Handy Edition.* Required of all preparatory students. Five hours a week throughout the year. Four sections: section 1, daily, at 9, and section 3, daily at 2, Miss Baker; section 2, daily, at 9:50, and section 4, daily at 12:20, Miss Moench.

3. GRAMMAR AND COMPOSITION II. This is more advanced work in grammar and composition. The grammar work includes a fairly complete study of etymology; the chief facts of syntax; and the construction, analysis, and punctuation of more difficult sentences. Considerable attention is given to the correction of sentences, faulty in either syntax or arrangement. The work in composition includes all exercises suggested in the text books used, as well as essays and briefer written exercises on subjects drawn from the English classics used in reading, and from the work in United States History. Attention is also given to orthography. Hyde's *Two Book Course: Book II*, Strang's *Exercises in English.* Required of all first year students. Five hours a week throughout the year. Four sections: section 1, daily, at 9, and section 4, daily, at 12:20, Mr. Hill; section 2, daily, at 9:50, and section 3, daily, at 2, Mr. Caine.

4. READING OF ENGLISH CLASSICS. The books read are those prescibed for study and practice in the uniform college entrance requirements: Macaulay—*Essay on Milton*, *Essay on Addison*; Milton—*Minor Poems*, *Paradise Lost, I-III;* Shakespeare—*Macbeth;* Burke—*Speech on Conciliation with America.* The reading is done with reference, first, to such oral expressions as shall evince a general understanding of the thought; next, with reference to a more exact knowledge of the language—the meaning of words and sentences, the elementary qualities of style, the important allusions, and the general plan or structure of the production. Written exercises consisting of outlines, reproductions, imitations, appreciations, and comparisons are required; and fine passages are committed to memory and spoken before the class. *College Entrance Requirements.* Required of all first year students. Three hours a week throughout the year. Four sections: section 1, daily, at 9:50, and section 3, daily, at 10:40, Miss Baker; section 2, daily, at 2, and section 4, daily, at 9, Miss Moench.

5. RHETORIC AND LITERATURE. Required of all second year students. Five hours a week throughout the year. Two sections: section 1, daily, at 9, and section 2, daily, at 9:50. Professor MacEwan.

(a) *The English Sentence.* After a rapid review of etymology, considerable attention being given to the formation of the verb and grouping of verb forms, the structure of the English sentence is carefully explained. Special attention is given to the order of words and other elements, difficult constructions, idioms, and abbreviated sentences. To connect this work with literature, and to afford constructive exercises, outlines of several books of *The Iliad* are required, first in topics, then in simple sentences, then in sentences containing more complicated elements, and finally in connected discourse. MacEwan's *Essentials of the English Sentence;* Bryant's Homer's *Iliad.*

(b) *Elementary Rhetoric.* This work includes a study of all the processes of literary composition—the choice of a subject, the statement of a theme, the collecting, selecting, and arranging of material, the revising of plan and of detailed expression, as well as a study of the elements of style and of the different forms of discourse. Constructive work is required applying in both oral and written exercises, all principles studied. The preparation of manuscript for the printer is taught in connection with the written work. Weekly exercises are required especially illustrating the laws of description and narration. *The Iliad*, and other poems previously read, furnish material for reproduction and for the study of versification. *Practical Rhetoric.*

(c) *Literature.* The first work in literature follows the elementary rhetoric, and is a critical study of the short, complete classics, essays, poems of various kinds, speeches, sketches and stories. Enough of each author and his times is told in familiar lectures, to awaken interest, and show the occasion of the production. In this work constant reference is made to rhetorical principles, and the style of different authors is carefully compared, and both style and form are studied with reference to the thought and sentiment. Essays in description and narration are still required, along with essays on topics suggested in the study of literature. The texts vary from year to year. Satisfactory collections are Syle's *From Milton to Tennyson*, *Masterpieces of British Literature*, *Masterpieces of American Literature.*

6. FORMS OF DISCOURSE. Instead of more advanced work in the general principles of style and composition, the general principles of description, narration, exposition and argumentation are studied; and to illustrate and enforce these, some masterpieces in each department are critically examined. The handbooks of English readings published by Holt & Co., furnish literature well adapted for the study of description, narration, and exposition.

Speeches of Burke and Webster furnish suitable material for the study of argumentation. Frequent oral and written exercises make the work entirely practical; and during the last ten weeks of the year, debates, written and oral, are had on questions of general interest. Baldwin's *Specimens of Prose Composition;* Brewster's *Specimens of Narration;* Lamont's *Specimen's of Exposition;* MacEwan's *Essentials of Argumentation.* Required of freshmen. Three hours a week throughout the year. T., Th., S., at 10:40.

7. HISTORY OF ENGLISH LITERATURE. This comprises a general survey of the field of literature in English, from Chaucer to The Lake School. Sufficient attention is paid to the leading authors of the different periods to make evident the chief characteristics of their thought and style. The growth of literary forms is carefully noted, and such comparative study is made as time allows. Considerable time is given to the critical reading of such texts as illustrate typical forms, and at the same time characterize great epochs: Chaucer's *Prologue* and *Knight's Tale*; Spencer's *Faery Queen*, *I*, and some minor poems; Shakespeare's *Hamlet* or *Lear*, and *Tempest;* Bacon's *Essays;* Milton's *Paradise Lost I-IV* (review) and *Samson Agonistes;* Dryden's *Religio Laici* and *Mac Flecknoe;* Pope's *Rape of the Lock* and one *Epistle;* typical eighteenth novel; some passages from the prose satirists; characteristic poems from Burns. Much of the study is reported to the class in essays, each student presenting one biographical, and two critical essays during the year. Halleck's *English Literature;* Maynard's *English Classic Series*. Required of students in the Agricultural, Domestic Science, Commercial, and General Science courses. Three hours a week throughout the year.

8. LITERARY MASTERPIECES. The work of this course is the study of longer masterpieces. The work has varied from year to year, according to the preparation and demand of the students, and the convenience of the

instructor. Usually all the important forms of literature have been laid under contribution—the drama, the epic, the lyric, the novel, the essay, biographical and critical, the oration, and history—about six recitations being given to each piece selected. The work of the class room has been largely a report of students, either oral or written on what they have done by themselves. The following texts, changing somewhat from year to year, have constituted the course: Two plays of Shakespeare; Browning's *Blot in the Scutcheon;* Byron's *Childe Harold;* De Quincy's *Revolt of the Tartars;* selected poems of Wordsworth, Burns, Browning, and Tennyson; George Eliot's *Silas Marner;* Tennyson's *Princess;* Macaulay's and Carlyle's *Essay on Johnson;* Carlyle's *Essay on Burns;* Burke's *Speech on American Taxation;* Webster's *Reply to Hayne;* Southey's *Life of Nelson;* Motley's *Peter the Great.* Required of students in the Domestic Science and General Science courses; elective to others who have completed courses 1-7. Two hours a week throughout the year.

9. NINETEENTH CENTURY AUTHORS. A critical study is made of either Browning's or Tennyson's poems. Such poems are read as best exhibit the author's genius and literary art, and at the same time afford material for the study of poetic form. Or, a comparative study is made of the poetry of Wordsworth and Byron, with occasional excursions into the poetry of Burns, Shelley, and Keats, for further comparison. *Cambridge Edition of the English Poets.* Elective to students who have completed courses 1-7. Two hours a week throughout the year.

10. SHAKESPEARE AND THE DRAMA. Ten plays are read, with reference to plot, structure, characterization, technique, and general literary qualities. Freytag's *Technique of the Drama.* Hudson's, Rolfe's, the Arden, or other college editions of Shakespeare. Elective to students who have completed courses 1-7. Two hours a week throughout the year.

11. ELOCUTION. The principal aim in this course is to develop easy, natural readers, who will be able to express the thought of the author in a clear and impressive manner. It also includes practical work in recitation and impersonation. Each student is expected to learn and present a recitation to the class once each month, or as often as the number in the class will allow. Elective to students who have completed Course 4.

MODERN LANGUAGES.

PROFESSOR MOENCH.

The courses in modern languages are designed to give the student a technical knowledge of the German, French, and Spanish languages, sufficient to read and to speak them with facility and accuracy; to present the general facts of the literary history of each language with a detailed statement of special important epochs; and to give the student, by occasional lectures illustrated by the stereopticon, some idea of the cities, customs, and life of the people whose language is studied.

I. GERMAN.

1. ELEMENTARY COURSE. — Practice is had in pronunciation, and systematic drill is given in grammar with special reference to syntax. The latter part of the course is given to reading Schiller's *Das Lied von der Glocke* and about 150 pages of easy prose, with special reference to scientific matters. Optional with French or Spanish in the Commercial Course, and with French in all other college courses. Three hours a week throughout the year.

2. INTERMEDIATE COURSE. A scientific reader is used; and Schiller's *Wilhelm Tell*; Lessing's *Minna von Barn-*

helm and *Nathan der Weise* are read, in connection with German composition. Optional, as Course 1. Three hours a week throughout the year.

3. ADVANCED COURSE. Scientific reading, and the reading of Goethe's *Faust*, will be accompanied with essays on literary and philosophical subjects suggested by the reading. Conversation is practiced through the entire three years and is made a feature of importance. Elective to those who have completed courses 1 and 2. Three hours a week throughout the year.

II. FRENCH.

1. ELEMENTARY COURSE. An outline of the essentials of French grammar is given along with exercises on pronunciation; translations are made from French into English and from English into French; easy prose selections are read from representative writers. Optional with German or Spanish in the Commercial Course, and with German in all other college courses. Three hours a week throughout the year.

2. ADVANCED COURSE. Scientific readers and other reading matter are used, with readings from the various classic authors, as Corneille, Racine, and Molière. Conversation is made a marked feature. Optional, as Course 1. Three hours a week throughout the year.

III. SPANISH.

1. ELEMENTARY COURSE. Considerable time is given to the colloquial Spanish. The close relations of the United States with Central and South America and the various islands where Spanish is spoken, have increased the value of a speaking knowledge of this language. The essentials of Spanish grammar are taught; readings are selected from Spanish authors, and are made the basis of

conversation. Optional with German or French in the Commercial Course. Three hours a week throughout the year.

2. ADVANCED COURSE. The more advanced work includes business correspondence, commercial terms and conversation, and readings from Spanish newspaper and magazine articles of the day. Open to those who have completed Course 1. Three hours a week throughout the year.

HISTORY AND CIVICS.

PROFESSOR ENGLE.

The purpose of this department is to arouse interest in historical investigation, to prepare for citizenship, to give information concerning the structure and mechanism of industrial society, to stimulate students to engage in research work, and to lead them into correct methods of investigating historical, sociological, and governmental problems.

1. UNITED STATES HISTORY. This course includes a study of the social life, political parties, territorial expansion, biography of leading characters, industrial development, military history, and historical literature of the United States. Lectures are given upon text book topics that need fuller elucidation. Reading in the library is encouraged; written reviews on historical works are required. Concurrent and contemperaneous history receive proper attention. Fiske's *United States History*. Required of first year students in the Engineering Preparatory, and Domestic Science courses, and of third and fourth year students in the Manual Training courses in Mechanic Arts, and Domestic Arts, respectively. Three hours a week throughout the year. Four sections: section 1, T.,

Th., S., at 2; section 2, W., F., at 10:40, Th., at 2:50. section 3, T., F., S., at 9; section 4, W., Th., F., at 9:50.

2. GENERAL HISTORY. In this course a brief outline is given of the world's history. The history of Oriental nations, Greece, Rome, the Middle Ages, and Modern Europe is considered. The origin and development of religions, political institutions, art, philosophy, education and laws, and social life receive proper attention. Limited and well defined impressions are sought after. The work is supplemented by appropriate lectures. Great and overshadowing events receive proper emphasis. Swinton's *Outlines of the World's History*. Required of second year students in the Manual Training Course in Domestic Arts, the Commercial Course, and the Engineering Preparatory Course. Three hours a week throughout the year. Two sections: section 1, T., Th., S., at 10:40; section 2, T., Th., F., at 12:20.

3. CIVIL GOVERNMENT. This course deals with the science of government. Origin, development, and changes in governmental institutions are carefully studied. Comparative views are taken. The evolution of civil government in the United States receives a large share of attention. Our local institutions are shown to have their origin far back in English history. This course is closely correlated with American history. Required of students in the Commercial and General Science courses. Two hours a week throughout the year. W., S., at 12:20.

4. ECONOMICS. Production, distribution, and exchange of wealth are the leading topics in Economics. They are presented in such a manner as to throw light upon the practical problems of commercial and agricultural life. Questions relating to finance, banking, and exchange receive a discussion wholly of a scientific nature. This course is closely correlated with industrial history. Bullock's *Introduction to Economics*, and the *Ashley Series*. Required of juniors in the Agricultural and Commercial courses. Three hours a week throughout the year in the

Agricultural Course, and five hours a week during the second term in the Commercial Course.

5. SOCIOLOGY. This course presents a fundamental discussion of the elements of society—their origin, growth, relations, and interactions. The mechanism of society as it appears in modern times is typically discussed. Celebrated theories of society are briefly reviewed. Among the points emphasized are social composition, social constitution, and the principle of association. Small and Vincent's *Sociology.* Required of juniors in the Commercial Course. Five hours a week during the first term.

6. INDUSTRIAL HISTORY OF THE UNITED STATES. United States history is here reviewed solely as an outgrowth of inventions, manufactures, commerce, and navigation. The effect of inventions upon industrial activity and civilization in general is traced with care. The Civil War is explained as an outgrowth of conflicting industrial systems. Wright's *Industrial History of the United States.* Elective to those who have completed courses 1, 2, and 3. Three hours a week during the first term.

7. CONSTITUTIONAL AMERICAN HISTORY. The work in this subject includes the evolution and interpretation of our national constitution, the relation of the commonwealth constitutions to our national government, governmental forms as they develop from early colonial activity, and the relative value of written and unwritten constitutions. Supreme court decisions as influencing the course of our government are studied. Thorpe's *Constitutional History.* Elective to those who have completed courses 1, 2, and 3. Three hours a week during the second term.

8. ENGLISH HISTORY. This is distinctively an advanced course. Much preparative work is required. Racial characteristics, literary development, constitutional growth, social life at different stages, English conservatism, origins, contributions, colonial system, art,

architecture, poor laws, and pauperism, are some of the topics that are discussed. One chief aim in this course is to teach the philosophy of history concretely. Research work is made an important feature. Suggestive texts: Gardiner's *History of England;* Droysen's *Principles of History;* Green's *Shorter History of England.* Elective to those who have completed courses 1 and 2. Three hours a week throughout the year.

9. PHILOSOPHY OF HISTORY. This course deals with causal relations, fundamental principles, comparative discussions of civilizations, historical values, relation of geography and history, historical sources, and appropriate tests of the truthfulness of facts. Droysen's *Principles of History.* Elective to those who have completed courses 1, 2, and 3. Three hours a week during one term.

DRAWING.

MISS RICHARDS.

The work in drawing is varied to meet the needs of the several classes for whom it is designed.

1. FREE HAND DRAWING I. Required of all first year students in the Agricultural and Engineering Preparatory courses. Two hours a week throughout the year. Two sections: section 1, (1, 2) daily, at 12:20; section 2, (3, 4) daily, at 2:50.

(a) *Elementary:* This work embraces drawing in outline and in mass from simple casts and objects, particular attention being paid to proportion and the simple rules of perspective; the history of art and architecture; sketching in pencil and charcoal from life and objects; the history of painting and the study of composition. First term.

(b) *Advanced:* This embraces more advanced work in light and shade, drawing from full figure casts, modeling in clay, sketching in pencil and charcoal, the students making sketches to bring to class; work in color by students who have attained reasonable efficiency in drawing. Second term.

2. FREE HAND DRAWING II. Required of second year students in the Manual Training Course in Mechanic Arts. Two hours a week throughout the year. Daily, at 2.

(a) *Elementary:* This includes drawing in outline and mass from simple casts and objects, as in Course 1 (a); the history of art and architecture, its relation to the industrial arts; the study of industrial design. First term.

(b) *Advanced:* The same work is given in light and shade, drawing, modeling, and sketching, as in Course 1 (b). Original work in design is an important feature of the course.

3. FREE HAND DRAWING III. Required of third year students in the Domestic Science Course. Two hours a week throughout the year. Daily, at 9.

(a) *Elementary:* This includes drawing in outline and mass, as in Course 1 (a); the history of art, architecture, and painting; the study of household decoration and the use of color. First term.

(b) *Advanced:* This embraces more advanced work in light and shade, drawing, modeling, and sketching, as in Course 1 (b); dress and its relation to art; design. Second term.

4. MECHANICAL DRAWING I. This course is intended as a preparation for the work which follows in the courses in engineering. It consists of a thorough drill in the elementary principles of projection, including linear perspective and the more common conventions of engineering drawing. Required of freshmen in the engineering courses who have had Drawing I. Three hours a week throughout the year. T., Th., S., at 9:50. Mr. Pulley.

5. MECHANICAL DRAWING II. This is the introductory course in mechanical drawing for students taking the

Manual Training Course in Mechanic Arts. It consists of simple projections, orthographic, isometric and oblique, and linear perspective. These are illustrated as far as possible by making working drawings of the simpler exercises of the shopwork. Required of third year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Two hours a week throughout the year. W., Th., F., at 12:20. Mr. Pulley.

6. DRAWING AND DESIGN. In this course the work is adapted to the line of shopwork which the student is pursuing. It is intended to give practice in design with consideration for proper proportion for strength as well as for aesthetic qualities. In this course the student is expected to make his own designs for his work in the shops. Required of fourth year students in the Manual Training Course in Mechanic Arts who have completed Drawing 4 or 5. Three hours a week throughout the year. T., Th., S., at 10:40. Mr. Pulley.

PSYCHOLOGY.

In this course the life of the normal individual is considered. Especial attention is given to those problems that have a living interest for the student, and find illustration in his every day life. The principal topics discussed are the relation of mind and body, habit, attention, memory, imagination, association of ideas, instinct, reasoning, emotion, will, and time and space phenomena. Elective in the General Science Course.

GEOGRAPHY.

ASSISTANT PROFESSOR ROBINSON.

To get an intelligent conception of the natural resources of countries, the physical features receive special attention. Astronomical and geological features are presented as far as the course will permit. The principal changes that have wrought the present conditions are studied and the atmosphere and water receive attention. Map drawing and frequent reviews are features of the course. Commerce and its effect upon nations are considered, as are also the classifications of mankind, animals, and plants. Required of all students in the Preparatory Course, and of first year students in the Manual Training Course in Mechanic Arts. Five hours a week throughout the year. Four sections: section 1, daily, at 2; section 2, daily, at 12:20; section 3, daily, at 10:40; section 4, daily, at 9.

MILITARY SCIENCE AND TACTICS.

All male students of the College, except those physically disabled, are required to take two years' work in the military department. The government furnishes Springfield cadet rifles and equipment for infantry drill, and two three-inch rifled cannons for artillery instruction. A uniform, consisting of campaign hat, dark blue blouse, light blue trousers, and white regulation gloves must be worn by the cadets. Arrangements have been made for obtaining this uniformthrough the Secretary of the College at actual cost. The cost of the uniform is about $13.50. All students of the College taking drill are required to obtain the prescribed uniform, which must be worn upon all occasions of drill, or when students are reciving any other military instruction.

The attention of students intending to enter College is called to the fact that this uniform has been found more serviceable than a suit of civilian clothes of the same price, and students are required to make arrangements so as to be able to order this uniform when they enter.

Twice a week throughout the year, the officers of the department meet for discussion of matters relating to military work, and for recitations in the United States Infantry drill regulations.

1. INFANTRY DRILL. This includes all the movements described in the drill regulations of the U. S. Army, from the gymnastic instruction in the setting-up exercises, the school of the soldier, the bayonet exercise, to the drill by company and battalion; exercise in estimating distances by sign and also by sound; target practice with rifle, for which the government makes an annual allowance of ammunition; instruction in signaling with flag, and in military telegraphy.

2. ARTILLERY DRILL. This embraces drill in the manual of the piece, and target practice when practicable.

3. CALISTHENICS. During the winter months systematic progress cannot be made in the regular drill work. The purpose of the department, during this time, is to maintain the ground already covered. With this object in view, the regular drill is given only twice a week. However, during the remainder of the time, a thorough course is given in military calisthenics. The object of this course is to give the cadets a healthy body with a proper military carriage. Required of all cadets.

4. THEORETICAL INSTRUCTION. During the second term of the second year, a systematic course is given in military science, by means of lectures. The following texts are used in this course: Califf's *Notes on Military Science;* Hamilton's *Elementary Principles Connected with the Art of War;* Wagner's *Tactics.*

PENMANSHIP.

MR. MAUGHAN.

The course in penmanship consists of blackboard and individual instruction. Required of all students in the Preparatory Course, and of first year students in the Manual Training courses in Mechanic Arts and Domestic Arts. Two sections: section 1(1, 2), daily, at 10:40; section 2 (3, 4), daily, at 2:50.

VOCAL MUSIC.

MR. MITTON.

A chorus of mixed voices, and also a male chorus, is organized, composed of all students who wish to join; and instruction in choral work of a high order is given. Every effort is made to cultivate a taste for music and to assist the students in acquiring a knowledge of the same. A military band will be organized at the beginning of the year and arrangements will be made for regular instruction and practice.

PHYSICAL CULTURE.

MISS MOENCH.

The chief aim in this department is not so much to develop muscle as to relieve the mental strain. Special attention, however, is given to any desiring a course for development or to overcome physical defects.

The exercises consist of military, fancy and calisthenic marching; Swedish and free gymnastics; light and heavy work with apparatus; Indian clubs, dumb-bells, wands, pulley weights, rings, parallel and horizontal bars, ladder, ropes, horse, etc.

Library and Museum Accessions.

LIBRARY ADDITIONS.

Among those to whom the Library is indebted for books and other favors received during the year 1900-1901 are: Hon. J. L. Rawlins, Hon. F. J. Cannon, Hon. W. H. King, Hon. Thomas Kearns, Hon. George Sutherland, Professor J. F. Engle, the several National Departments and Bureaus at Washington, and colleges and universities of the United States and Canada.

In addition to local and state newspapers, sent to the College through the courtesy of the publishers, and a large number of periodicals received at the Experiment Station library in exchange for the publications of the Station, the following magazines are placed in the reading room upon subscription:

LITERARY MAGAZINES.

Atlantic Monthly.
Book News.
Century.
Collier's Illustrated Weekly.
Contemporary Review.
Cosmopolitan.
Critic.
Dial.
Eclectic Magazine.
Edinburgh Review.
Education.
Educational Review.
Fortnightly Review.
Forum.
Harper's Bazar.
Harper's Monthly.
Harper's Weekly.
Journal of Education.
Literary Digest.
Literary News.
Literary World.
Munsey's Magazine.
Nation.
Nineteenth Century.
North American Review.
Outlook.

Review of Reviews, Am. Ed.
Scribner's Magazine.
University Chronicle.
Westminster Review.
World's Work, The
Woman's Journal.

SCIENTIFIC AND TECHNICAL MAGAZINES.

American Gardening.
American Kitchen Magazine.
American Machinist.
American Historical Review
American Naturalist.
American Veterinary Review.
Art Education.
Botanical Gazette.
Breeder's Gazette.
Cabinet Maker and Upholsterer.
Carpentry and Building.
Country Gentleman, The
Dietetic Magazine.
Electrician.
Engineering Magazine.
Farmer's Magazine.
Forester.
Good Housekeeping.
House Beautiful, The
Johns Hopkins University Studies.
Journal of American Folk Lore.
Journal of Association of Engineering Societies.
Machinery.
Nature.
Political Science Quarterly.
Popular Science Monthly.
Quarterly Journal of Economics.
Sanitarian.
School Review.
Science.
Scientific American—Building Edition.
Scientific American—Supplement.
Studies in Historical and Political Science.
Werner's Magazine.

Alumni Association.

The Alumni Association was organized in June, 1899. All those who hold degrees in any of the courses of the College are eligible to membership. In the first two classes, three students were graduated with the degree of Bachelor of Civil Engineering (B. C. E.) Since 1895, five prescribed courses have been offered, but the degree in each has been Bachelor of Science (B. S.), the particular course being specified in the diploma.

OFFICERS FOR 1901-1902.

William H. Homer, '00, President.
W. W. McLaughlin, '96, First Vice-President.
Mamie Smith, '97, Second Vice-President.
Mattie Stover, '01, Secretary.
Osborne Widtsoe, '97, Treasurer.

CLASS OF 1900.*

Crawford, Stanley	Manti.
Fleming, Burton Percival	Logan.
Homer, Rose	Oxford, Idaho.
Homer, William H., Jr	Oxford, Idaho
Jensen, Joseph William	Newton.
Maughan, Elizabeth Collins	Petersboro.
Nelson, William	Newton.
Taylor, George Francis	Plain City.

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*Former classes were announced in Catalogue for 1900-1901.

Eighth Annual Commencement.

GRADUATES, 1901.

WITH DEGREES.

Blanche Cooper, (General Science in Domestic Science) .... McCammon, Idaho.
Esther Catherine Evans, (General Science) .... Malad, Idaho.
Mary Almeda Perry, (General Science) .... Vernal.
Charles Bailey Smith, (General Science in Civil Engineering) .. Boise, Idaho.
Mattie Evangeline Stover, (General Science) .... Logan.

WITH CERTIFICATES.

Emma Elida Mattson, (Manual Training Course in Domestic Arts).... .... St. Charles, Idaho.
Loyal Tarbet, (Manual Training Course in Mechanic Arts) .... Logan

Catalogue of Students.

SENIORS.

Cooper, Blanche	McCammon, Idaho.
Evans, Esther	Malad, Idaho.
Perry, Almeda	Vernal.
Smith, Charles Bailey	Boise, Idaho.
Stover, Mattie Evangeline	Logan.

JUNIORS.

Bithell, Joseph James	Salt Lake City.
Brown, Charles Franklin	Loa.
Holmgren, Amanda	Brigham City.
Irvine, Robert Leo	Logan.
Morgan, Samuel Perry	Franklin, Idaho.
Pulley, Edward Parley	American Fork.
Stewart, Robert	Plain City.

SOPHOMORES.

Caine, John Thomas	Logan.
Christensen, George A.	Newton.
Fisher, Ray Homer	Oxford, Idaho.
Homer, Roy Fisher	Oxford, Idaho.
Howell, Joseph Maughan	Wellsville.
Maughan, Alice Farnes	Petersboro.
Maughan, Josephine Farnes	Petersboro.
Maughan, May	Logan.
Merrill, Ambrose, Pond	Richmond
Merrill, Preston Reynolds	Richmond.
Nebeker, Aquilla Chauncey	Laketown.
Parker, Harry Cooper	Wellsville.
Pyle, Fred D.	Graham, Wyoming.

Santschi, Eugene	Castle Gate.
Webster, Ella Lillian	Montpelier, Idaho.

FRESHMEN.

Adams, Hugh Robert	Logan.
Beckstead, Bertie	Swan Lake, Idaho.
Bennett, Harry	Blackfoot, Idaho.
Birchell, James Joshua	Ft. Duchesne.
Caine, Blanche Elsie	Logan.
Cannon, Read Tenney	Salt Lake City.
Cooper, Coral	McCammon, Idaho.
Crawford, Edmund	Manti.
Crozier, Harry Cullen	Point Lookout.
Davis, Richard Bowen	Cherry Creek, Idaho.
Dudley, Allen Jackson	Oxford, Idaho.
Duncan, Leonard Ellsworth	American Fork.
Egbert, Samuel Leroy	Logan.
Goodwin, Sarah Logan	Logan.
Greaves, Joseph Eames	Preston, Idaho.
Hess, Charles E	Georgetown, Idaho.
Hunsaker, Israel, Jr	Honeyville.
Hunsaker, Orpha	Honeyville.
Jacques, Norman Albert	Logan.
Jardine, William	Cherry Creek, Idaho.
Jensen, William Arthur	Hyde Park.
Jones, Richard William	Logan.
Lafount, Arthur Charles	Logan.
Lish, Emma	Deweyville.
Lowe, Millie	Franklin, Idaho.
McCausland, Charles Arthur	Logan.
Marshall, Harvey M	Logan.
Maughan, Ella	Logan.
Neilson, Neils Peter	Logan.
Owens, Richard Evan	Malad, Idaho.
Patterson, Joseph Peter	Bloomington, Idaho.
Paulson, Nels Peter	Logan.
Pierce, Eugenio Snow	Brigham City.

Reeder, Aletha	Hyde Park.
Reeder, Nettie	Hyde Park.
Schvaneveldt, Alonzo	Preston, Idaho.
Swendsen, Warren G	Blackfoot, Idaho.
West, Frank L	Ogden.
West, Ray B	Ogden.

SPECIAL.

Benson, Joseph	Logan.
Brown, Alexander	Lanark, Idaho.
Brown, George	Lanark, Idaho.
Christensen, Florence	Newton.
Clark, Edward John	King.
Cohn, Max David	Oneida, Idaho.
Cooper, Robert McEwan	Nephi.
Eames, Ezra	Logan.
Elsinore, James Austin	American Fork.
Farrell, Vendla	Logan.
Fryar, Allen Porter	Soda Springs, Idaho.
Groesbeck, Marion	Logan.
Groesbeck, Susie	Logan.
Hansen, Corinne	Salt Lake City.
Hansen, Nellie Page	Logan.
Hellewell, George Edward	Downey, Idaho.
Hellewell, Mary Ann	Downey, Idaho.
Holmgren, Lydia	Brigham City.
Janes, May	Hyrum.
Knox, Eva	Logan.
Lafount, Elsie Edith	Logan.
Loughney, Clarence	Ogden.
Moore, Harvey L	Syracuse.
Nebeker, Ella	Logan.
Nebeker, Myrtie	Sigurd.
Parkinson, Albert H	Franklin, Idaho.
Parkinson, Leonard G	Franklin, Idaho.
Rawson, Elsa Sabre	Kanesville.
Rossiter, Ernest Crabtree	Providence.

Sullivan, Julia Melvina	Grace, Idaho.
Tarbet, Joseph Abner	Logan.
Thatcher, Genevieve	Logan.
Welker, Ray	Bloomington, Idaho.
Williams, Manasseh Woodville	Soda Springs, Idaho.

SUB-FRESHMEN.

Adams, Orval Webster	Logan.
Allen, Ernest Maughan	Wellsville.
Allred, Irvine	Spring City.
Ball, Lizzie May	Wasatch.
Beckstead, Samuel Leonidas	Swan Lake, Idaho.
Boyle, Alexander	Lost River, Idaho.
Bunce, John	Logan.
Bybee, William Lee	Honeyville.
Campbell, Ezra	Providence.
Christopherson, Joseph	Richmond.
Coburn, John Leatham	Wellsville.
Cooper, Mary Pearl	McCammon, Idaho.
Cotterell, Archie	Farmington.
Crockwell, Earl Maderia	Salt Lake City.
Darley, Charles Thirkell	Wellsville.
Darley, William Owen	Wellsville.
Douglas, Pearl	Smithfield.
Dunford, Isaac Clayton	Salt Lake City.
Ecklund, Ernest	Newton.
Farrell, David	Smithfield.
Ferris, Arthur	Arco, Idaho.
Fife, Lewis	Providence.
Findlay, Alexander Merle	Kanab, Utah.
Fredrickson, John Julius	Malad, Idaho.
Furey, Charles Manford	Leslie, Idaho.
Goodwin, William Charles	Logan.
Gneiting, John	Logan.
Gulley, Clarence	Montpelier, Idaho.
Hanks, Alfred Lyman	Tooele.
Hansen, Oswald	Logan.

Harrison, Eliza	Liberty, Idaho.
Hellewell, James Burrup	Downey, Idaho,
Hepworth, James Edward	Salt Lake City.
Hillhouse, Robert William	Rockland, Idaho.
Hiltbrand, John	Logan.
Howard, Edward Lorenzo	Rockland, Idaho.
Howard, Lila	Rockland, Idaho.
Howell, Sarah Hettie	Yost.
Hunt, Sylvia	Swan Lake, Idaho.
Jacobson, Marie Caroline	Cokeville, Wyoming.
James, Robert Henry	Logan.
Jardine, James Tertious	Cherry Creek, Idaho.
Johanson, James William	Morgan.
Johnson, Hans Chris	Bancroft, Idaho.
Jones, Archie Taylor	Dayton, Idaho.
Kerr, William Horace	Logan.
Knox, John Gatlin	Logan.
Lewis, William	Nounan, Idaho.
Long, Walter J	Hebron, Nebraska.
Loughney, Blanche	Ogden.
Lowe, Laura	Franklin, Idaho.
Lundberg, Fred L	Logan.
McGregor, James Davis	Perry, Idaho.
McGregor, William Campble	Perry, Idaho.
McKelvey, James J	Houston, Idaho.
McMurray, John	Oakley, Idaho.
McNiel, Marian	Logan.
Mather, Howard Artemas	Salmon, Idaho.
Mathews, Alma Mahonri	Providence.
Merrill, Frank Thomas	Mapleton, Idaho.
Miller, Melvin Parley	Murray.
Montrose, Pearl	Weston, Idaho.
Montrose, Sanie	Weston, Idaho.
Munk, Elizabeth	Logan.
Nielson, Teresa	Preston, Idaho.
O'Brien, William Leroy	Layton.
Olsen, John	Logan.

Olsen, Wilford	Weston, Idaho.
Peery, Frank S	Ogden.
Peterson, Elmer George	Baker City, Oregon.
Peterson, Mattie Othelia	Smithfield.
Pugmire, Jonathan Rich	St. Charles, Idaho.
Rawson, Martha Elizabeth	Ogden.
Redford, Thomas Lloyd	Wellsville.
Rhodes, John Fitz	Salt Lake City.
Rich, Harry Margetts	Paris, Idaho.
Rich, Joseph Coulson	St. Charles, Idaho.
Rich, Samuel Grover	Blackfoot, Idaho.
Robinson, Jennie Leah	American Fork.
Sanders, Pearl	Pocatello, Idaho.
Smart, Iva	Franklin, Idaho.
Smith, James Henry	Boise, Idaho.
Sneddon, Robert	Diamondville, Wyo.
Stevenson, Minnie Josephine	Plymouth.
Stewart, Ella	Plain City.
Stewart, Mary	Plain City.
Tarbet, David	Logan.
Taylor, Ulysses Carl	Willard.
Thatcher, Sarah Wooley	Logan.
Trevethan, Thomas	Salt Lake City.
Winkler, Ernest	Mt. Pleasant.
Wrathall, Clyde	Grantsville.
Yates, Lulu	Logan.

MANUAL TRAINING.

MECHANIC ARTS.

Third Year.

Affleck, Adam Alonzo	Logan.
Archibald, Joseph Henry	Wellsville.
Bailey, Jim	Kemmerer, Wyoming.
McCulloch, Oliver	Logan.

Tarbet, Loyal	Logan.
Toombs, Roy Chandler	Carlin, Nevada.

Second Year.

Dahle, Fred	Logan.
Fisher, John Ira	Bountiful.
Sidwell, Lafayette Mills	Manti.
Smith, Joseph Franklin	Wardboro, Idaho.
Wangsgard, James Henry	Huntsville.

First Year.

Allen, Elijah William	Cove.
Allen, Joseph Elijah	Cove.
Anderson, Charles Joseph	Grantsville.
Barron, Franklin Henry	Logan.
Casto, Raymond R	Custer, Idaho.
Crookston, Nicholas Oscar	Greenville.
Davis, Lehi Thomas	Castle Gate.
Eliason, John	Deseret.
Fife, Luther Lechonius	Providence.
Fonnesbeck, Victor Christian	Logan.
Gabrielsen, Hans Martin	Logan.
Gustaveson, Ernest August	Grantsville.
Hansen, Seth Alfred	Logan.
Hart, Henry Jason	Bloomington, Idaho.
Hepworth, Samuel Leroy	Salt Lake City.
Jensen, Casper Smith	Richmond.
Johansen, Fred	Logan.
Johnson, Hans	Deweyville.
Kidman, Frederick James	Mendon.
Langton, Seth Alma	Logan.
McKinney, Clarance	Salmon, Idaho.
Maughan, George	Greenville.
Mawhinney, Hugh Sloan	Park City.
Miller, Alma David	Providence.

Morgan, George Edward	Franklin, Idaho.
Palmer, Parley	Aurora.
Peterson, Oliver Larsen	Petersboro.
Quayle, William Littlefair	Logan.
Raymond, Alonzo	McCammon, Idaho.
Reese, David, Jr.	Castle Gate.
Reeves, Charles	Brigham City.
Ridlen, John Warren	Knoxville, Iowa.
Robbins, Cyrus McAlister	Snowville.
Ross, Ray Arthur	Kanesville.
Smith, Leroy	Greenville.
Tanner, Ivan Lee	Indianola.
Taylor, David M.	Payson.
Thorley, Harry Alldridge	Cedar City.
White, John Rodney	Smith.
Wildes, Richard	Coalville.
Willis, Arthur Merrinell	Kanara.
Wright, George William	Franklin, Idaho.
Young, William	Castle Gate.

Winter Course.

Davis, Earl Atha	Wallsburg.
Fuhriman, Godfrey Jared	Providence.
Hansen, Victor Levant	Bear River City.
Hoppie, Fred	Tecoma, Nevada.
Hughes, Robert	Samaria, Idaho.
Lambert, Royal Ellsworth	Idaho Falls, Idaho.
Latham, Oliver David	Antelope, Idaho.
Ledingham, Albert	Newton.
Lloyd, Charles Alfred	Wellsville.
May, Alma Oluf	Newton.
Nyman, Andrew	Greenville.
Redford, Abraham Knight	Logan.

DOMESTIC ARTS.

Second Year.

Eames, Sarah	Preston, Idaho.

Edwards, Etta	Willard.
Greaves, Hattie	Preston, Idaho.
Mattson, Emma Elida	St. Charles, Idaho.
Merrill, Jesse	Mapleton, Idaho.
Nebeker, Effie	Logan.
Powers, Lydia May	Smithfield,
Stewart, Grace	Logan.
Stewart, Stella	Logan.
Wright, Verena	Franklin, Idaho.

First Year.

Benson, Eva	Logan.
Burnett, Margaret Ellen	Eden.
Bybee, Maud	Lewiston.
Bybee, Ruth	Lewiston.
Christiansen, Jennie	Hyrum.
Cook, Lydia Luetta	Garden City.
Davis, Annie J	Malad, Idaho.
Evans, Ann	Layton.
Fisher, Pearl	Oxford, Idaho.
Gorder, Hilda Linna	Morgan.
Hansen, Nettie	Logan.
Hawkins, Alice	Samaria, Idaho.
Jones, Sadie	Wellsville.
Lindsay, Nettie	Eden.
McKensie, Crissie	Paradise.
Marble, Esther	Deweyville.
Marble, Flora	Deweyville.
Merrill, Bertha	Swan Lake, Idaho.
Morrell, Mary Salina	Logan.
Rainey, Inez Leone	Richmond.
Raymond, Ione	McCammon, Idaho.
Smith, Julia Charlotta	Preston, Idaho.
Sponberg, Matilda	Preston, Idaho.
Stephens, Lydia	Malad, Idaho.
Wilson, Margaret Helen	Eden.

Winter Course.

Dalrymple, Debora	Montpelier, Idaho.
Hansen, Meda	Collinston.
Olsen, Mary Esmerelda	Plain City.
Olsen, Rinda	Brigham City.
Thomasson, Louise	Logan.

ELEMENTARY AGRICULTURE.

First Year.

Crismon, George Whicker	Salt Lake City.
Dopp, Carlos	Lewiston.
Ford, Alfred	Wallsburg.
Gorder, Norman Andrew	Morgan.
Miller, Arnold David	Syracuse.

Winter Course.

Frew, John F	Hooper.
Frew, William Amons	Hooper.
Green, Alma L	Menan, Idaho.
Haslam, George	Wellsville.
Justesen, Rasmus O	Spring City.
Peterson, Edward Larson	Petersboro.
Taylor, Parley Pratt	Harrisville.

PREPARATORY.

Abel, Robert	Lewiston.
Ball, Susie	Wasatch.
Black, William Henry	Kanosh.
Blanchard, Henry	Logan.
Brown, George Washington	Ogden.
Busenbark, Mabel Doris	Collinston.
Christensen, Lewis Peter	Shelley, Idaho.
Clark, Elijah	St. Charles, Idaho.
Cohn, Jerome Guy	Oneida, Idaho.
Edmunds, Lorenzo	Salt Lake City.
Elam, Millard	Kemmerer, Wyoming.
Evans, Emma Cecilla	Layton.

Fensky, Gottlieb	Phickr Jurod, Russia.
Fife, Albert	Providence.
Fife, Walter	Providence.
Findlay, John Fuller	Kanab.
Gorder, Walter Andrew	Morgan.
Green, John F	Layton.
Green, Margaret Davinie	Layton.
Halvorson, Cris Henry	Castle Gate.
Halvorson, Joseph	Castle Gate.
Hellewell, Janetta Iris	Downey, Idaho.
Hemmert, Esther	Thayne, Wyoming.
Howell, Luther Maughan	Wellsville.
Hugie, William Christian	Logan.
Ingram, John Edward	Kanara.
Iverson, Orlando	Brigham City.
Jacobson, Alma Gustave	Logan.
Janes, Edith	Hyrum.
Jeppesen, Nels Peter	Geneva.
Johansen, Christian J	Mt. Pleasant.
Johnson, Charley	Helper.
Jones, John William	Malad, Idaho.
Keller, Heber	Mink Creek, Idaho.
Kidman, Hyrum	Petersboro.
Mathews, Leon	Providence.
Matthews, Parley Pratt	Grantsville.
McCracken, James Lauder	Smithfield.
McCulloch, Bert	Logan.
McDermaid, William	Diamondville, Wyo.
McNeil, William	Logan.
Macfarlane, William Chatterly	St. George.
Madsen, Howard Peter	Manti.
Madsen, Parley Christian	Manti.
Meakin, Frederick Orson	Lehi.
Mecham, Leonidas Smart	Chesterfield.
Moore, Thomas Ellis	Castle Rock.
Neeley, Alfarette	Honeyville.
Nielsen, Hyrum Carl	Preston, Idaho.

Olafson, Oscar	Logan.
Owens, Simon Madison	Laurel, Montana.
Parsons, Adrian	Thomas, Idaho.
Pathe, Ottie	Salt Lake City.
Patterson, Amy Eldora	Bloomington, Idaho.
Peterson, Levi Larson	Petersboro.
Pond, Casper Whittle	Gentile Valley, Idaho.
Rawlins, Orson W	Murray.
Rich, Hattie Sarjant	Paris, Idaho.
Sampson, Irving	Silver City, Idaho.
Schow, William	Geneva.
Smead, Thornley	Soda Springs, Idaho.
Spidell, Bessie Ray	Riverdale, Idaho.
Spidell, Ira Ossian	Riverdale.
Stephenson, Susan Marie	Mapleton, Idaho.
Thompson, Edward	Bear River City.
Thoresen, Eugene	Hyrum.
Tibbitts, George Samuel	Providence.
Welker, Gena	Bloomington, Idaho.
Wursten, John	Logan.

SUMMARY OF STUDENTS.

Seniors	5
Juniors	7
Sophomores	15
Freshmen	39
Special	34
	100
Sub-Freshmen	93
Manual Training:	
Mechanic Arts	66
Domestic Arts	40
Elementary Agriculture	12
Preparatory	69
Total	380

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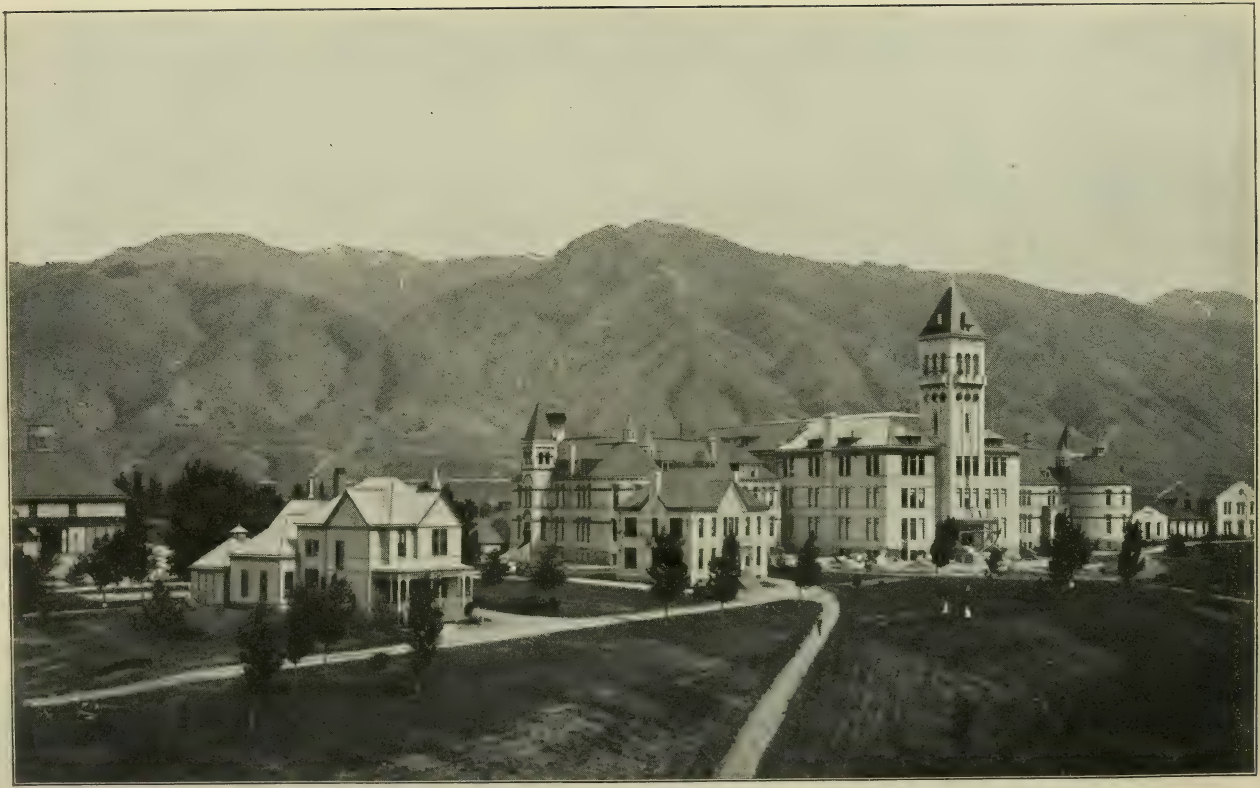
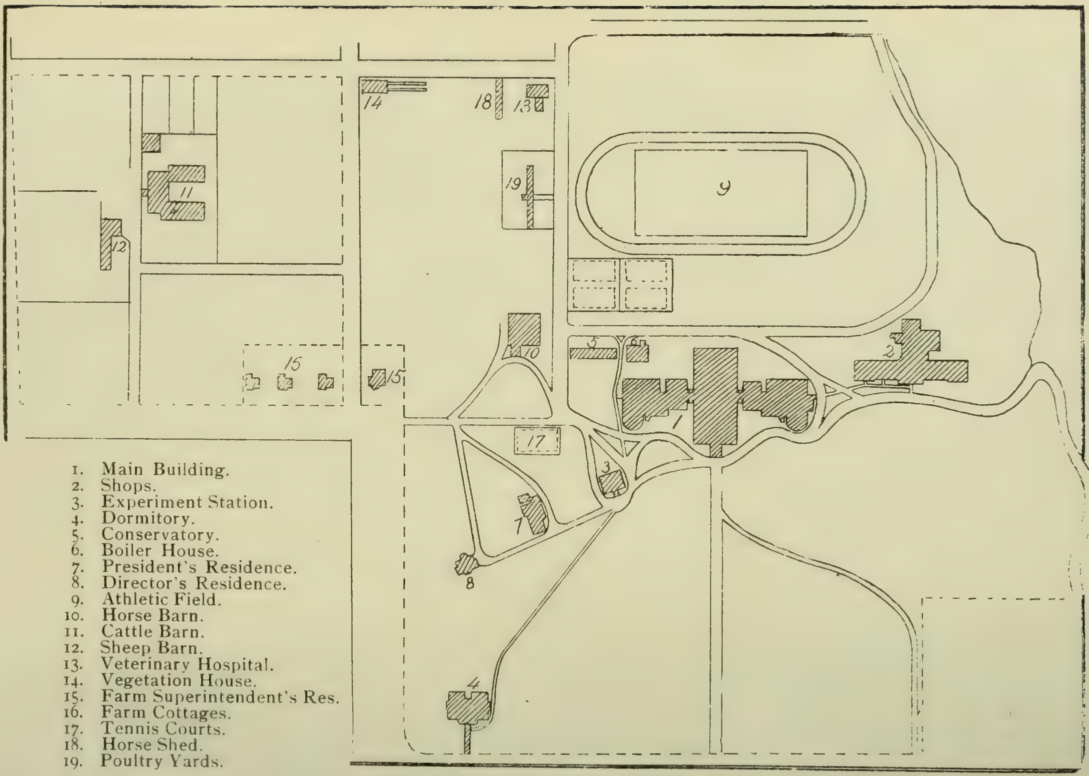


Group of Agricultural College Buildings.

Section of College Campus and Buildings.


1. Main Building.
2. Shops.
3. Experiment Station.
4. Dormitory.
5. Conservatory.
6. Boiler House.
7. President's Residence.
8. Director's Residence.
9. Athletic Field.
10. Horse Barn.
11. Cattle Barn.
12. Sheep Barn.
13. Veterinary Hospital.
14. Vegetation House.
15. Farm Superintendent's Res.
16. Farm Cottages.
17. Tennis Courts.
18. Horse Shed.
19. Poultry Yards.

PLAN OF COLLEGE CAMPUS.

CATALOGUE

OF THE

AGRICULTURAL COLLEGE

OF UTAH,

FOR

1902-1903.

With List of Students for 1901-1902.

LOGAN, UTAH.

Published by the College.
July, 1902.

1902.

JANUARY

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Utah Agricultural College

P10525

COLLEGE CALENDAR, 1902-1903.

FIRST TERM.

1902.

September 16, 17, Tuesday and Wednesday:	Entrance examinations. Registration of former students, and new students who are admitted on certificates.
September 18, Thursday:	Instruction begins.
November 27, Thursday:	Thanksgiving recess.
December 19, Friday:	Holiday recess begins.

1903.

January 6, Tuesday:	Instruction resumed. Winter courses begin.
January 31, Saturday:	First term ends.

SECOND TERM.

February 3, Tuesday:	Second term begins.
March 14, Saturday:	Winter courses end.
April 15, Wednesday:	Arbor Day.
May 30, Saturday:	Decoration Day.
June 7, Sunday:	Baccalaureate sermon.
June 8, Monday:	Class Day.
June 9, Tuesday:	Commencement. Alumni Reunion.
June 10, Wednesday:	Summer vacation begins.

BOARD OF TRUSTEES.

WILLIAM S. McCORNICK	Salt Lake City
EMILY S. RICHARDS	Salt Lake City
D. C. ADAMS	Salt Lake City
LORENZO HANSEN	Logan
ROSINA N. BAGLEY	Ogden
JOHN A. McALISTER	Logan
SETH A. LANGTON	Logan

OFFICERS OF THE BOARD.

WILLIAM S. McCORNICK	President
PETER W. MAUGHAN	Secretary
ALLAN M. FLEMING	Treasurer

EXECUTIVE COMMITTEE.

WILLIAM S. McCORNICK, Chairman.
D. C. ADAMS. LORENZO HANSEN.

FACULTY AND INSTRUCTORS.

Arranged in Groups in the Order of Seniority of Appointment.

WILLIAM JASPER KERR, B. S., D. Sc.,
PRESIDENT.

FREDERICK B. LINFIELD, B. S. A.,
Professor of Animal Industry.

JOHN A. WIDTSOE, M. A., Ph. D.,
DIRECTOR OF THE EXPERIMENT STATION.
Professor of Chemistry.

DALINDA COTEY, B. S.,
Professor of Domestic Science.

JOSEPH JENSON, S. B.,
DIRECTOR OF WORK SHOPS.
Professor of Mechanical Engineering.

GEORGE L. SWENDSEN, B. S.,
Professor of Civil Engineering.

EPHRAIM GOWANS GOWANS, B. S., M. D.,
Professor of Animal Biology.

JOHN FRANKLIN ENGLE, A. M., Ph. D.,
Professor of History and Civics.

WILLARD S. LANGTON, B. S.,
Professor of Mathematics and Astronomy.

KARL R. MOENCH, Ph. D.,
Professor of Modern Languages.

LEWIS A. MERRILL, B. S.,
Professor of Agronomy and Veterinary Science.

ALFRED HORATIO UPHAM, A. M.,
Professor of English Language and Literature.

D. EARLE BURCHELL,
Professor of Commerce.

Professor of Botany, Horticulture and Entomology.

PETER A. YODER, M. A., Ph. D.,
Associate Professor of Chemistry.

JAMES DRYDEN,
Assistant Professor of Meteorology and Animal Industry.

EDWARD W. ROBINSON,
Assistant Professor of Commercial Law and Geography.

JOHN T. CAINE, JR., B. S.,
PRINCIPAL OF PREPARATORY DEPARTMENT.
Instructor in English.

SARA GODWIN GOODWIN,
Librarian.

RUTH EVELYN MOENCH,
Instructor in English and Physical Culture.

AUGUST J. HANSEN,
Foreman in Carpentry.

JOHN A. CROCKETT,
Instructor in Dairy Husbandry.

WILLIAM PETERSEN, B. S.,
Instructor in Geology and Mathematics.

PETER W. MAUGHAN,
Instructor in Penmanship.

SAMUEL B. MITTON,
Instructor in Music.

HERBERT W. HILL, B. L.,
Instructor in English.

RENA BAKER,
Instructor in English.

LYDIA HOLMGREN,
Instructor in Domestic Science.

EDWARD PARLEY PULLEY, B. S.,
Instructor in Mechanical Engineering.

RHODA B. COOK,
Instructor in Sewing and Millinery.

LOUISE RICHARDS,*

Instructor in Drawing.

WALTER W. McLAUGHLIN, B. S.,

Instructor in Mathematics and Mining.

WILLIAM D. BEERS, B. S.,

Instructor in Military Science and Assistant in Civil Engineering.

L. A. OSTIEN, B. S., LL. B., Ph. B.;

Instructor in Mathematics and Astronomy.

GEORGE PETER CAMPBELL, B. S.,

Instructor in Physics and Athletics.

EDWIN A. WILLIAMS,

Foreman in Forging.

HENRY JEROME STUTTERD,

Instructor in Drawing.

ROBERT STEWART, B. S.,

Station Assistant in Chemistry.

MAMIE S. MORRELL,

Assistant in Household Science.

D. M. STEPHENS,

PRESIDENT'S PRIVATE SECRETARY.

Assistant in Commerce.

NOTE.—Two assistants in sewing and one instructor and one assistant in commerce will be employed before the opening of the College in September.

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* On Leave of Absence.

EXPERIMENT STATION STAFF.

W. J. KERR,
President of the College.

JOHN A. WIDTSOE,
Director and Chemist.

FREDERICK B. LINFIELD,
Animal Industry.

JAMES DRYDEN,
Meteorologist and Poultry Manager.

G. L. SWENDSEN,
Irrigation Engineer.

LEWIS A. MERRILL,
Agronomist.

EPHRAIM G. GOWANS,
Biologist.

Horticulturist.

PETER A. YODER,
Associate Chemist.

JOHN A. CROCKETT,
Assistant Dairyman.

W. W. McLAUGHLIN,
Assistant Chemist.

WILLIAM D. BEERS,
Assistant Irrigation Engineer.

ROBERT STEWART,
Assistant Chemist.

JOSEPH NELSON,
Farm Foreman.

ALLAN M. FLEMING,
Treasurer.

PETER W. MAUGHAN,
Secretary.

STANDING COMMITTEES OF THE FACULTY.

1902–1903.

The President of the College is ex-officio a member of all standing committees.

1. *Agriculture.*—Professors Linfield, Merrill, Widtsoe, Gowans, Swendsen, Dryden.

2. *Domestic Science.* — Professors Cotey, Linfield, Moench, Yoder, Mrs. Cook.

3. *Commerce.*—Professors Burchell, Engle, Robinson.

4. *Engineering.*—Professors Swendsen, Jenson, Langton, Mr. McLaughlin, Mr. Ostien.

5. *General Science.*—Professors Widtsoe, Upham, Langton, Moench, Mr. Campbell.

6. *Manual Training.*—Professors Jenson, Cotey, Burchell, Mrs. Cook, Mr. Williams.

7. *Preparatory.*—Principal Caine, Mr. Peterson, Miss Baker, Mr. Ostien.

8. *Farmers' Institute.* — Professors Widtsoe, Linfield, Swendsen, Merrill.

9. *Scholarship and Graduation.*—Professors Swendsen, Langton, Upham.

10. *College Publications.* — Professors Upham, Engle, Dryden, Caine, Mr. Hill.

11. *Students' Affairs.*—Professors Jenson, Caine, Gowans, Engle, Moench, Robinson, Mr. Peterson, Mrs. Cook, Mr. Ostien.

12. *Athletics.*—Professors Langton, Swendsen, Burchell, Gowans, Mr. Campbell, Miss Baker, Mr. McLaughlin.

13. *Amusements and Public Entertainments.*—Professors Gowans, Robinson, Mr. Hill, Miss Moench.

14. *Literary Societies.* — Professors Robinson, Engle, Moench, Mr. Peterson, Miss Moench, Mr. Ostien.

15. *Class Organizations.*—Professors Engle, Moench, Merrill, Mr. Hill, Miss Baker.

AGRICULTURAL COLLEGE OF UTAH.

General Information.

The Agricultural College of Utah constitutes part of the public school system of the State. It comprises practically six different schools: the School of Agriculture, the School of Domestic Science, the Commercial School, the School of Engineering, the School of General Science, and the Manual Training School; also the Agricultural Experiment Sation, which, while not providing directly for instructional work, is one of the most important departments of the institution. The character and extent of the work offered by the College are shown, as far as the limits of space will allow, in the following descriptive statements and schedules.

FOUNDATION AND ENDOWMENT.

An Act of Congress, approved July 2, 1862, provided that public lands should be granted to the several states, to the amount of "thirty thousand acres for each Senator and Representative in Congress," from the sale of which there should be established a perpetual fund, "the interest of which shall be inviolably appropriated, by each state which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The Act forbids the use of any portion of the aforesaid fund, or of the interest thereon, for the purchase, erection, or maintenance of any building or buildings. The states accepting the provisions of the Act are required to provide for the construction and maintenance of the necessary buildings and for the expenses of administration in carrying out the purposes of the Act.

On March 8, 1888, the Utah Legislative Assembly accepted the national law, and, in accordance with its provisions, founded the Agricultural College of Utah. The amount of public lands granted to this institution, under the provisions of the Act of Congress, was 90,000 acres; but by the terms of the Enabling Act, passed by Congress and approved July 16, 1894, providing for the admission of Utah as a state, the amount was increased to 200,000 acres.

Under an Act of Congress, approved March 2, 1887, the College receives $15,000 annually for the maintenance of the Experiment Station, "to aid in acquiring and diffusing among the people useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

Under an Act of Congress, approved August 30, 1890, the College receives $25,000 annually, "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their application to the industries of life."

In addition to the income from the national government and from the land grant fund, the College is dependent upon the State Legislature for such appropriations as are needed to meet the requirements of the several departments in accordance with the provisions of the Acts of Congress, and to provide for the further development of the institution consistent with the educational and industrial demands of the state.

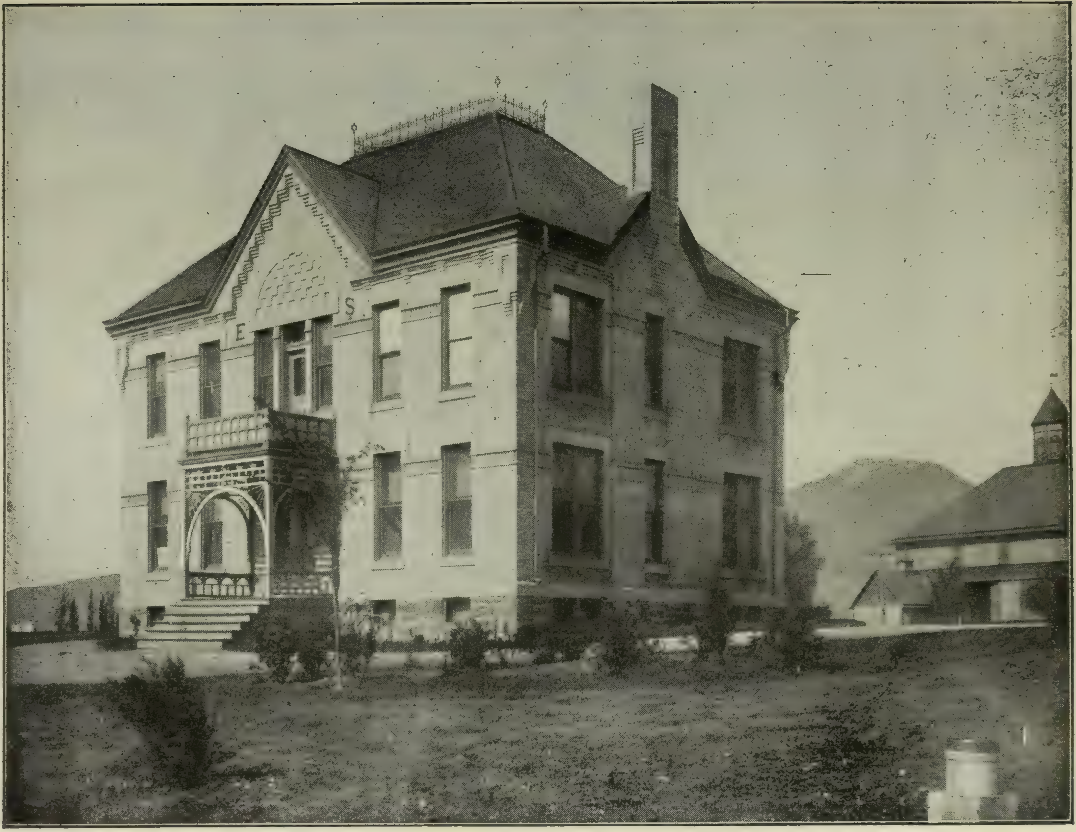
HISTORY.

In 1888, the legislature appropriated $25,000 for buildings, and the county of Cache and the city of Logan gave one hundred acres of land on which to locate the College. Plans were prepared for the main College building, and part of the south wing was completed. In September, 1890, the institution was first opened for the admission of students. Regular courses were offered in agriculture, domestic arts, civil engineering, mechanic arts, and commerce; also a preparatory course, and special courses in agriculture, mining engineering, and irrigation engineering.

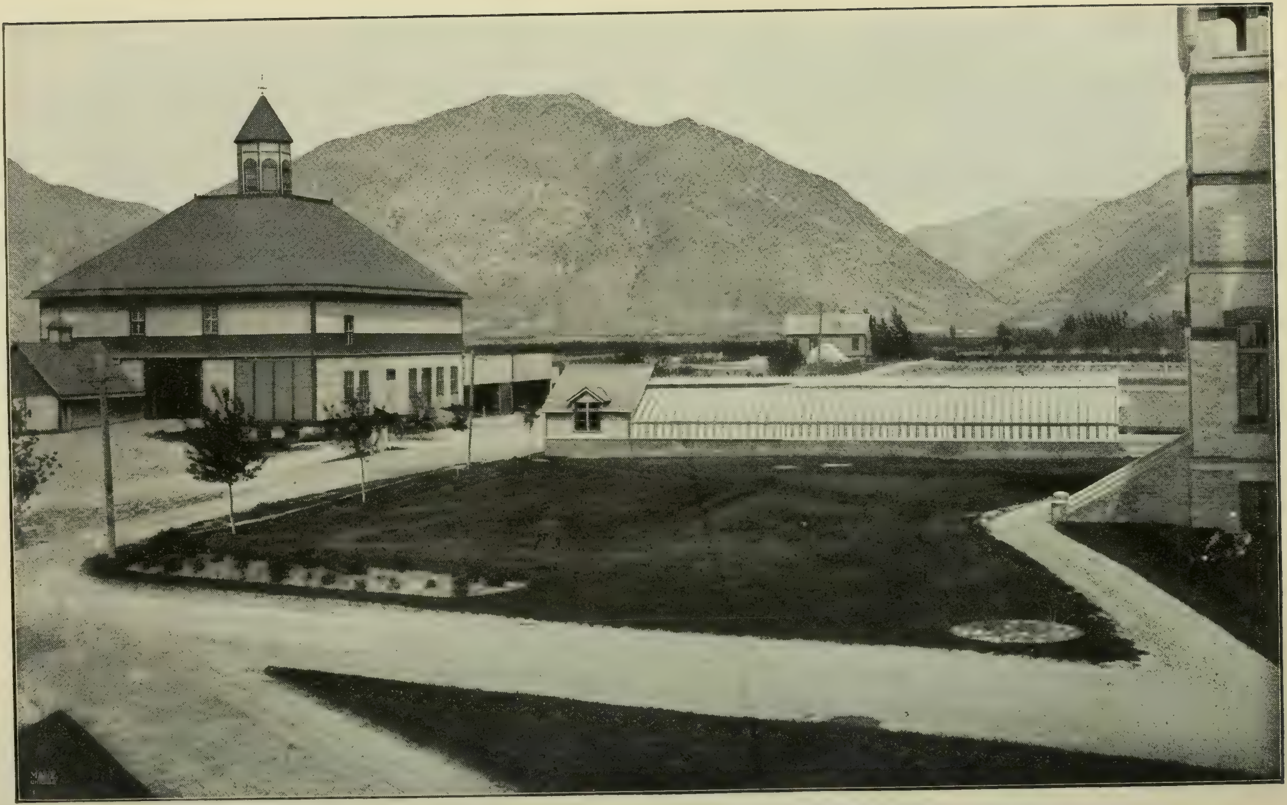
The legislature of 1890 appropriated $48,000 for the construction of an Experiment Station building, two laborers' cottages, and a farm house, and for the purchase of apparatus and the employment of administrative officers. The legislature of 1892 provided $108,000 with which the south wing, the north wing, and part of the center of the main College building were completed; rooms in the basement were provided with machinery and other facilities for shopwork; the scientific laboratories were more thoroughly equipped; and other additions were made which added greatly to the facilities of the institution for advanced work. In 1894, additional apparatus was provided, and a forcing house and a veterinary laboratory were constructed. In 1896 part of the Mechanic Arts building was completed, and the forge shops were removed from the Main Building. In 1897, the legislature made an appropriation for the maintenance of a Manual Training School, and for the extension of the Mechanic Arts Building, providing rooms for the chemical laboratories and the carpentry and machine shops; manual training courses were established in mechanic arts and domestic arts. In 1899, a greenhouse was constructed and equipped. In 1900, a department of art was established, additional class rooms were furnished, the several departments throughout the institution were more thoroughly organized, and other improvements were made, adding to the facilities for thorough and efficient work. The legislature of 1901 appropriated $108,200 for general maintenance and various improvements, including the completion of the front of the Main Building, the construction of model farm buildings and a vegetation house, and for the purchase of additional land for work in irrigation investigations, and additional apparatus.

POLICY.

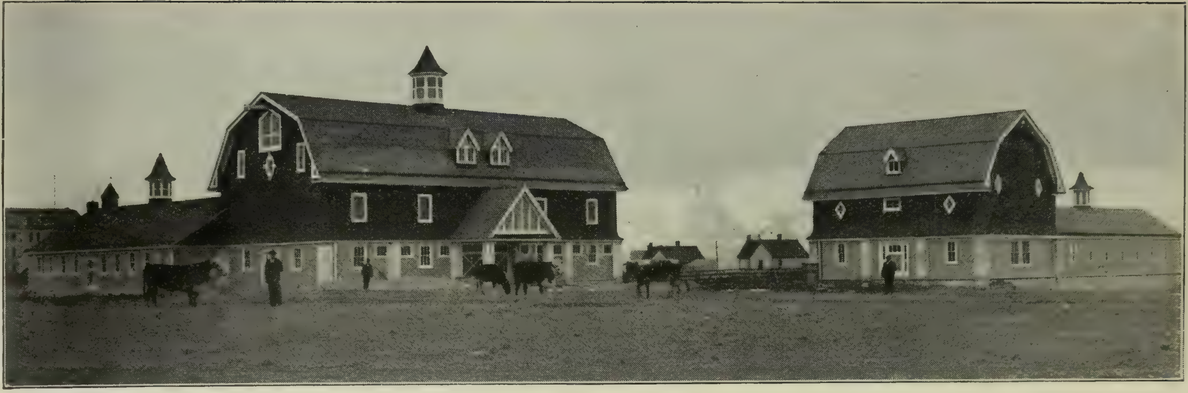
It is the policy of the Agricultural College of Utah, in accordance with the spirit of the law under which it is organized, to provide a liberal, thorough, and practical education. The two extremes in education, empiricism and the purely theoretical, are avoided, the practical being based upon, and united with, the thoroughly scientific. All the practical work, on the farm, in the orchards, vineyard, gardens, dairy, commercial rooms, kitchen, sewing rooms, different scientific laboratories, and carpenter, forge, and machine shops, is done in strict accordance with scientific principles. In addition to the practical work of the different courses, students are thoroughly trained in the related subjects of science, and in mathematics, history, English, and modern languages. While the importance of practical training is emphasized, the disciplinary value of education is kept constantly in view. It is recognized that



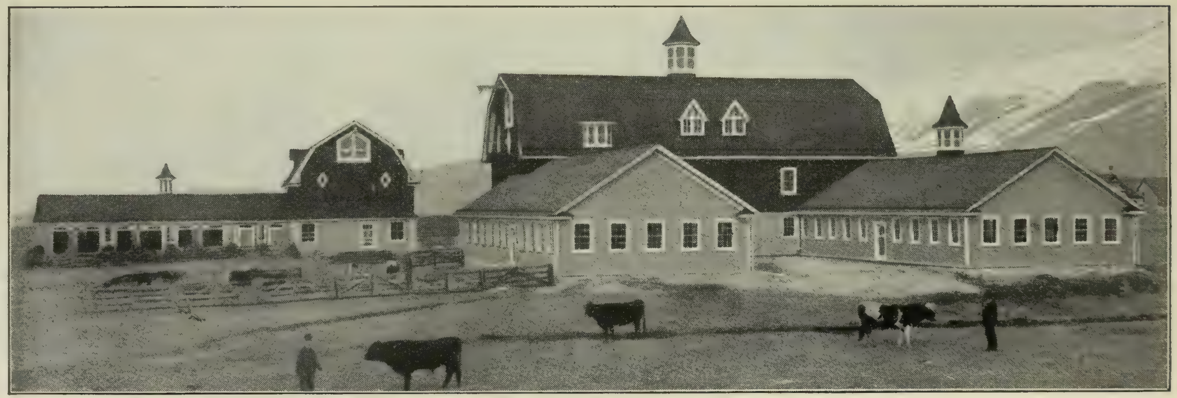
Experiment Station Building.



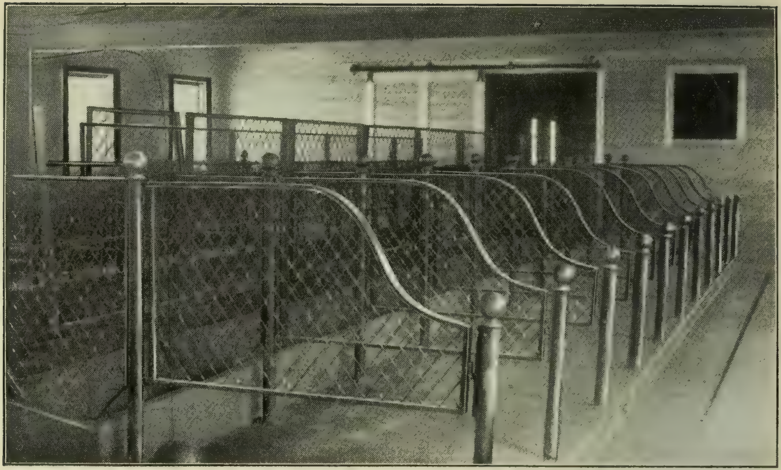
Barn, Conservatory, Veterinary Hospital.



College Sheep Barn and Cattle Barn, From North-East.



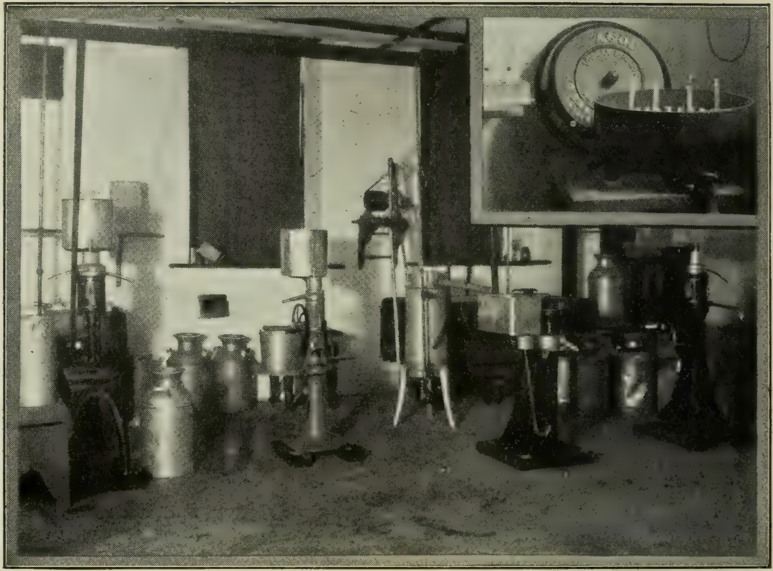
Sheep Barn and Cattle Barn, From South-West.



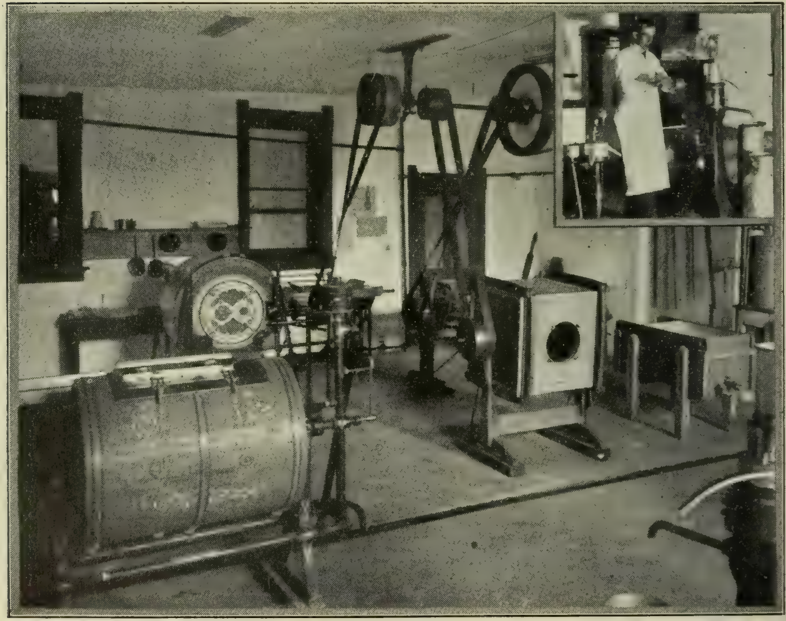
Stalls in Cattle Barn.

Veterinary Laboratory.

ANIMAL INDUSTRY CLASSES IN STOCK-JUDGING.



Dairy—Showing Separators and Babcock Test.



Section of College Dairy.

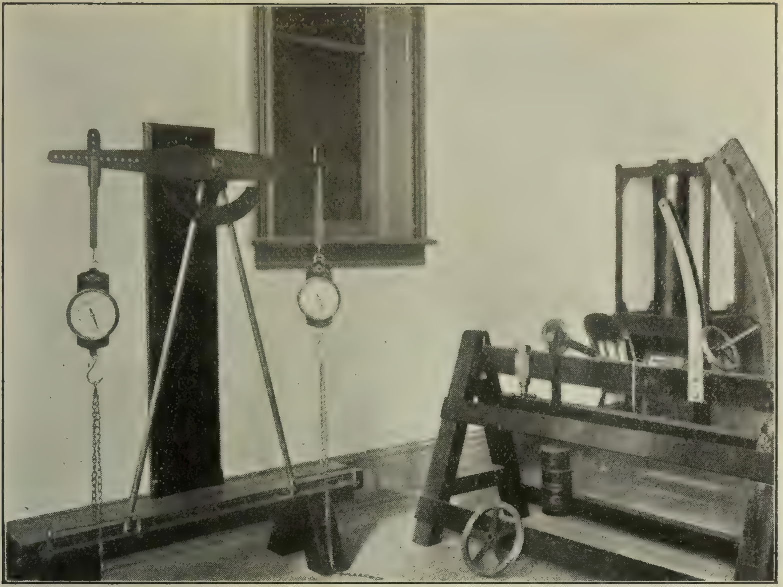
Views of Station Work.

View in College Orchard.

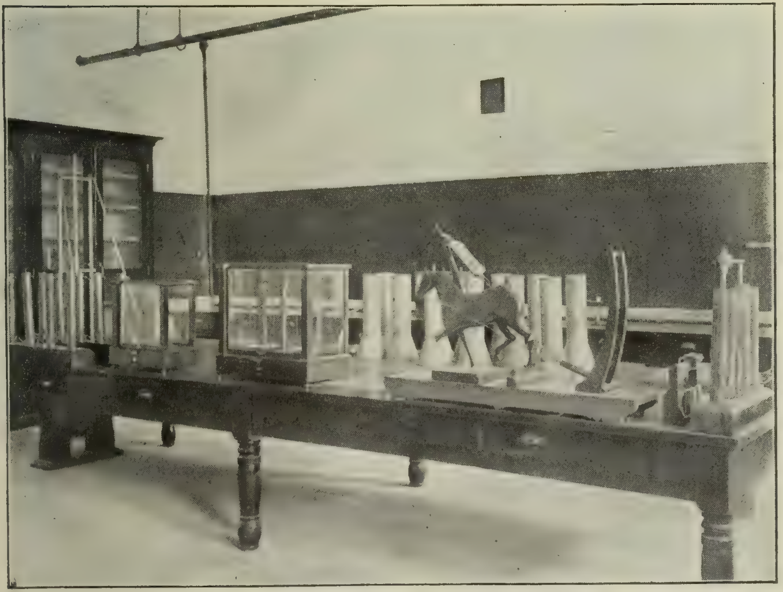
Orchard.

View in Conservatory.

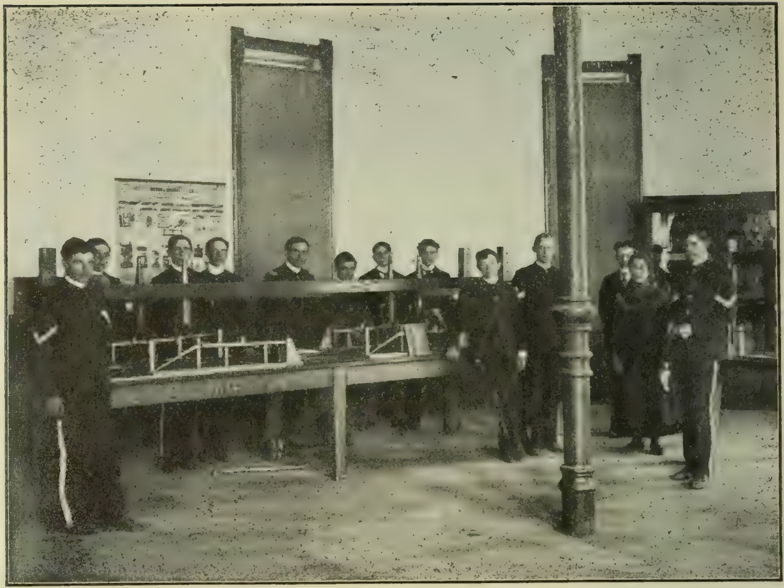
View in Conservatory.



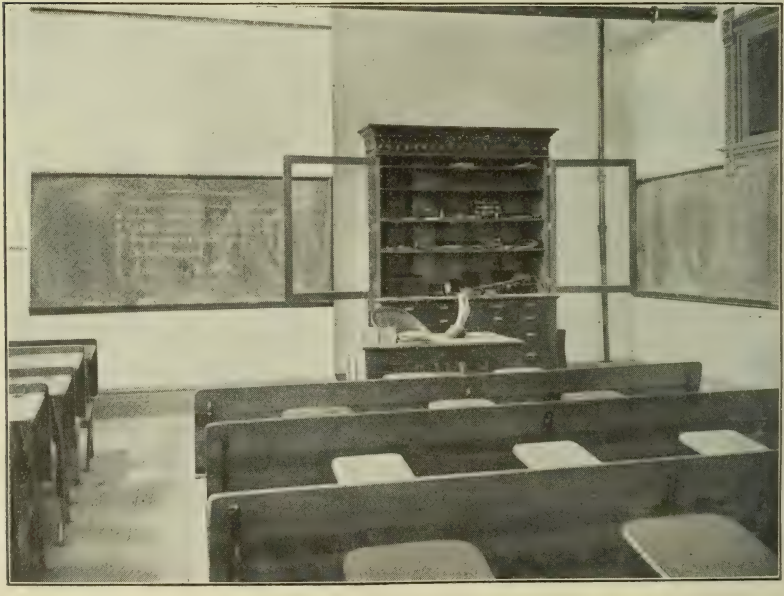
Agricultural Physics Laboratory.



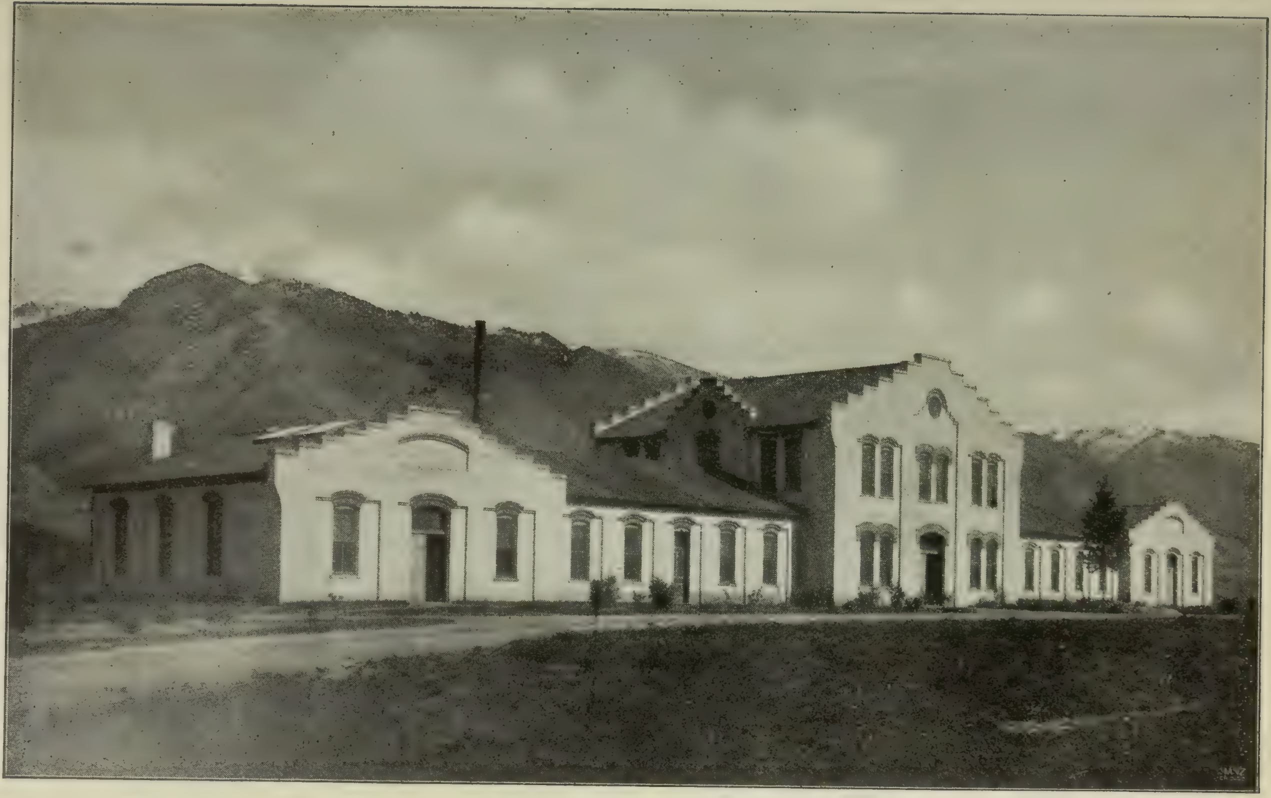
Agricultural Physics Laboratory.



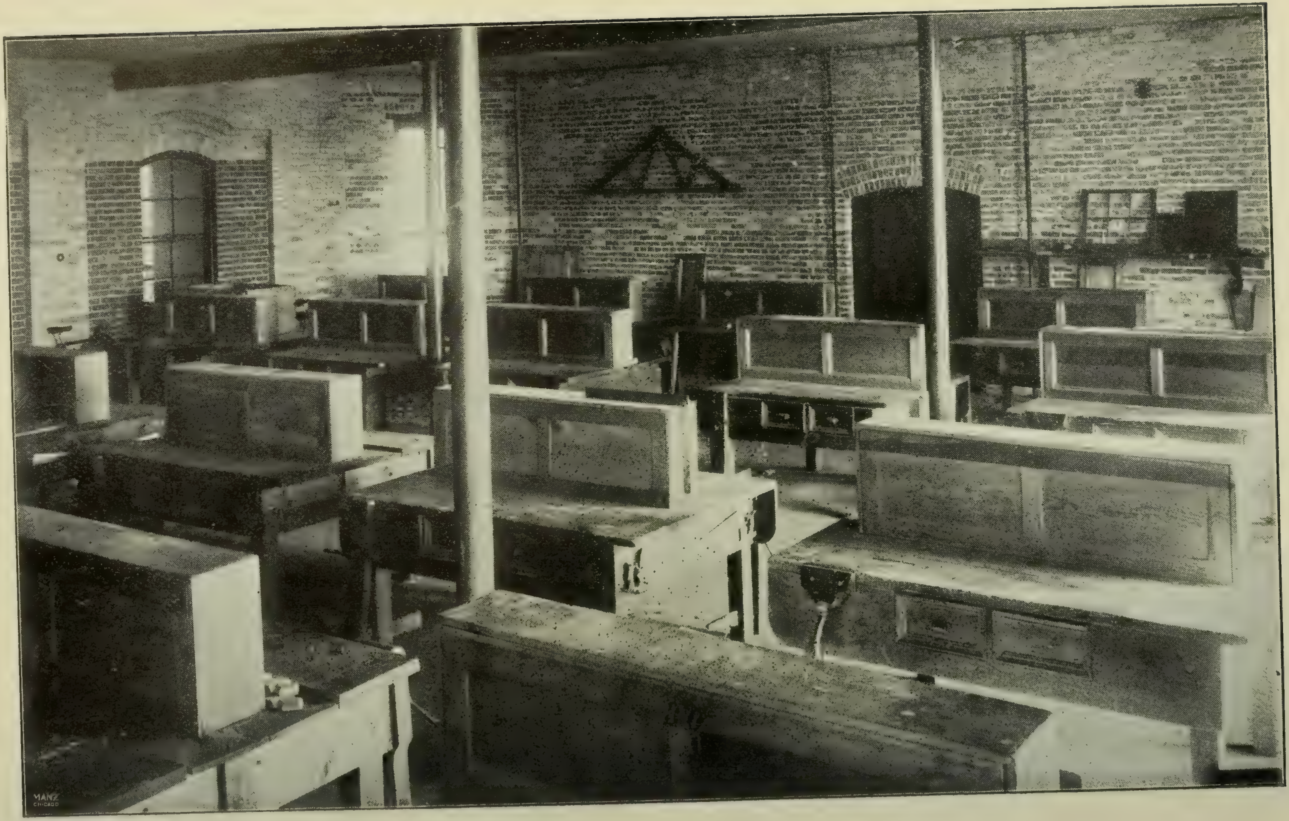
View in Physical Laboratory.



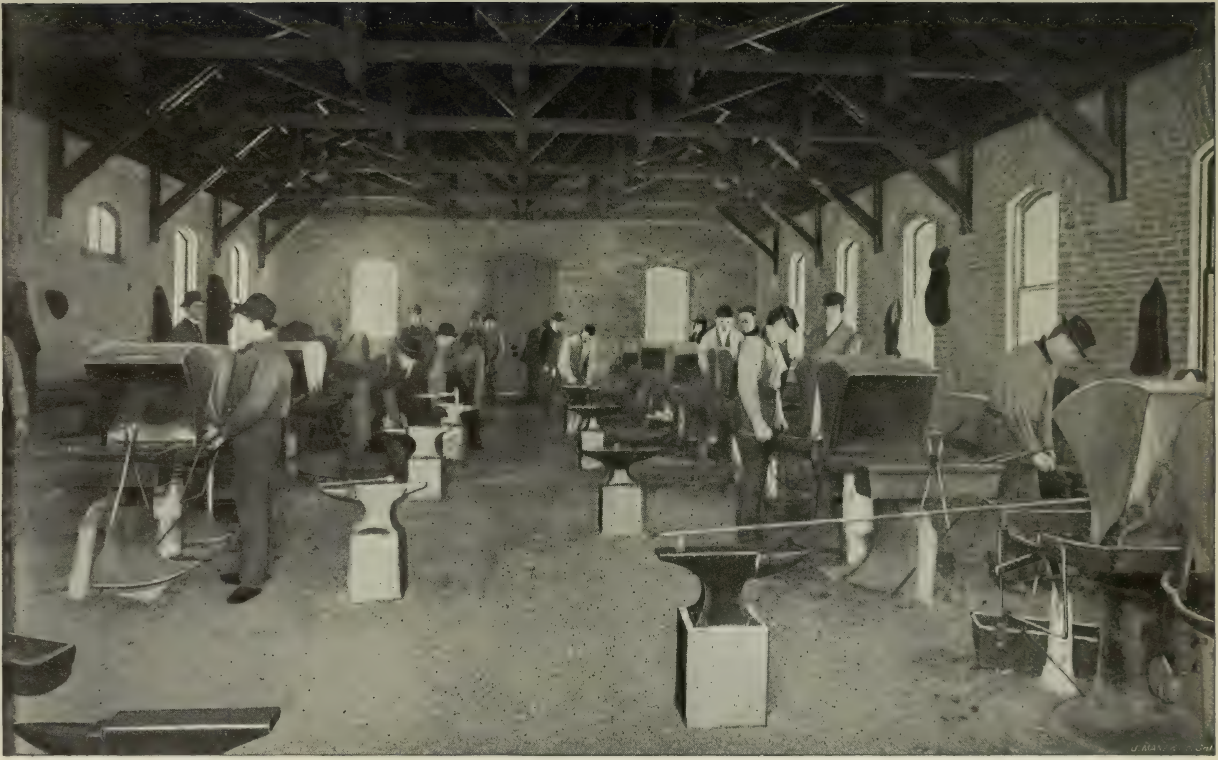
Veternary Science Class Room.



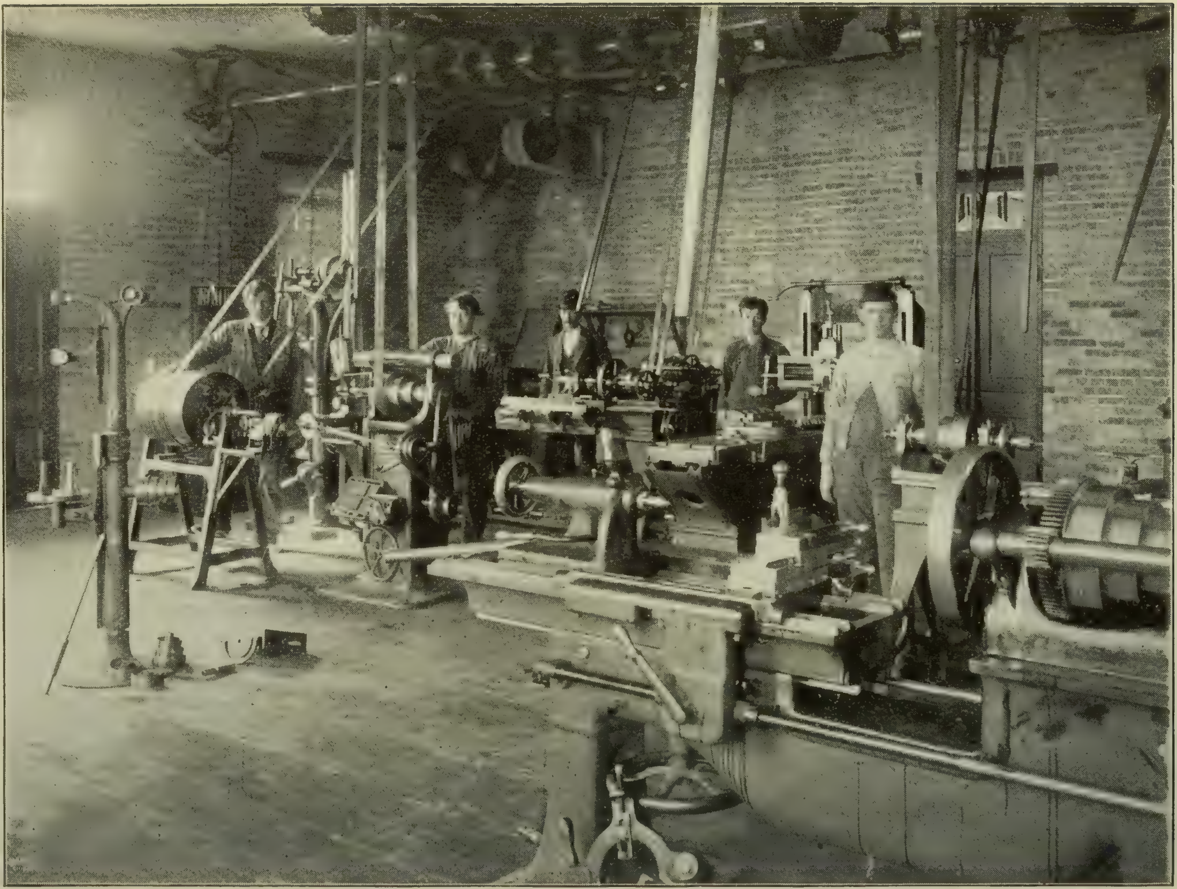
Mechanic Arts Building.


MANZ
CHICAGO

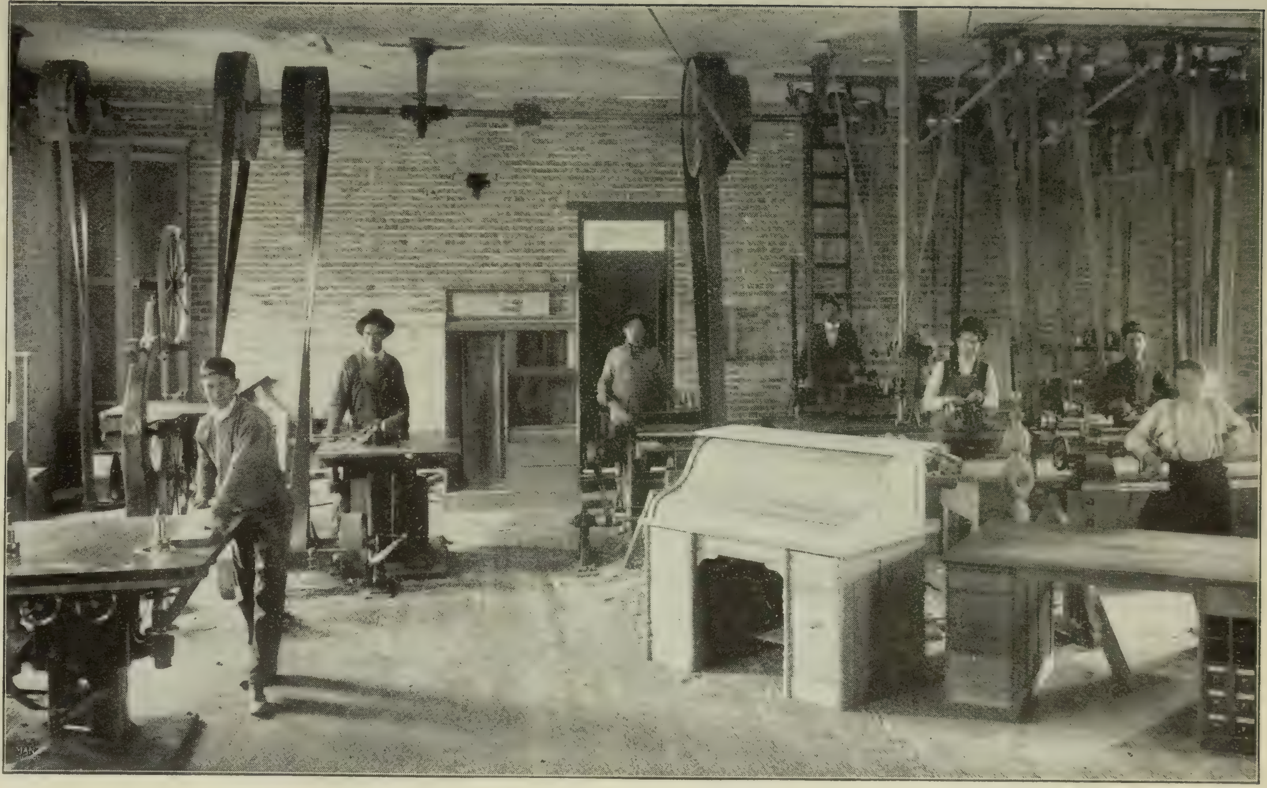
Carpenter Shop.



Forge Room.

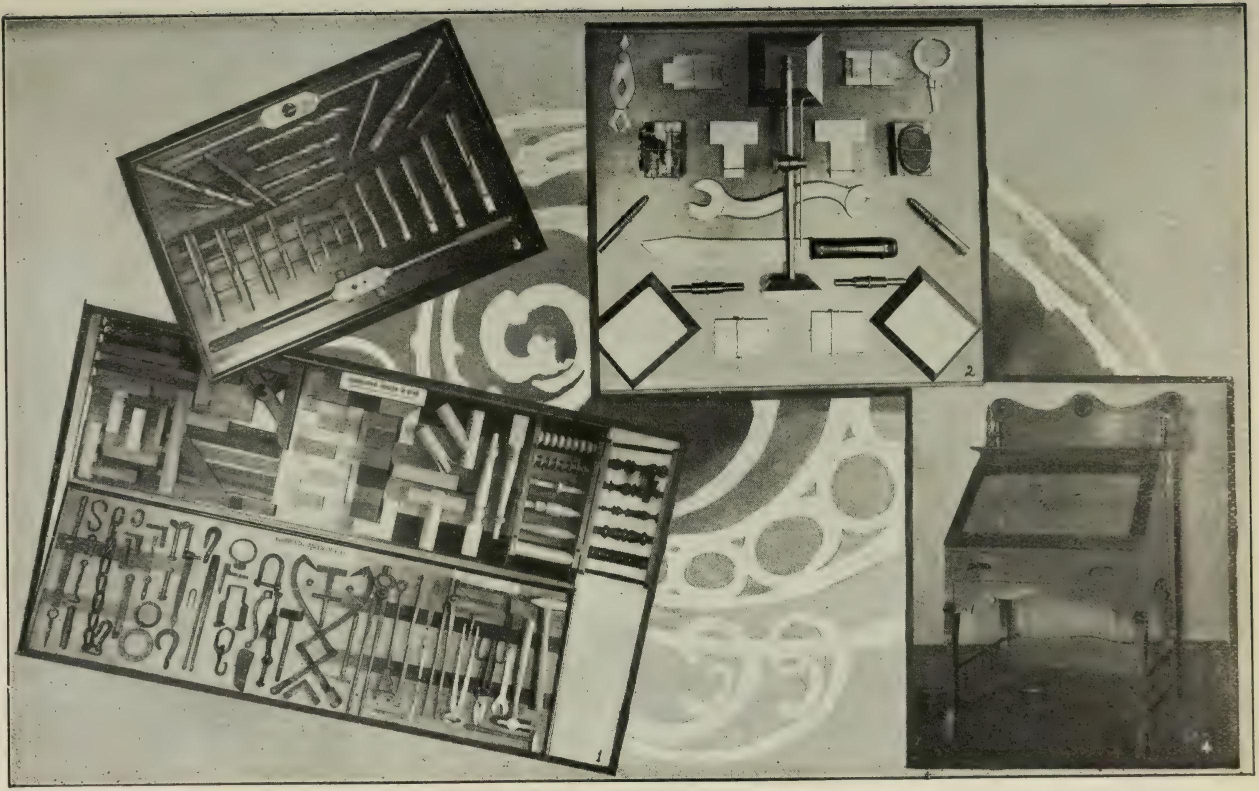


Iron-Working Machine Room.



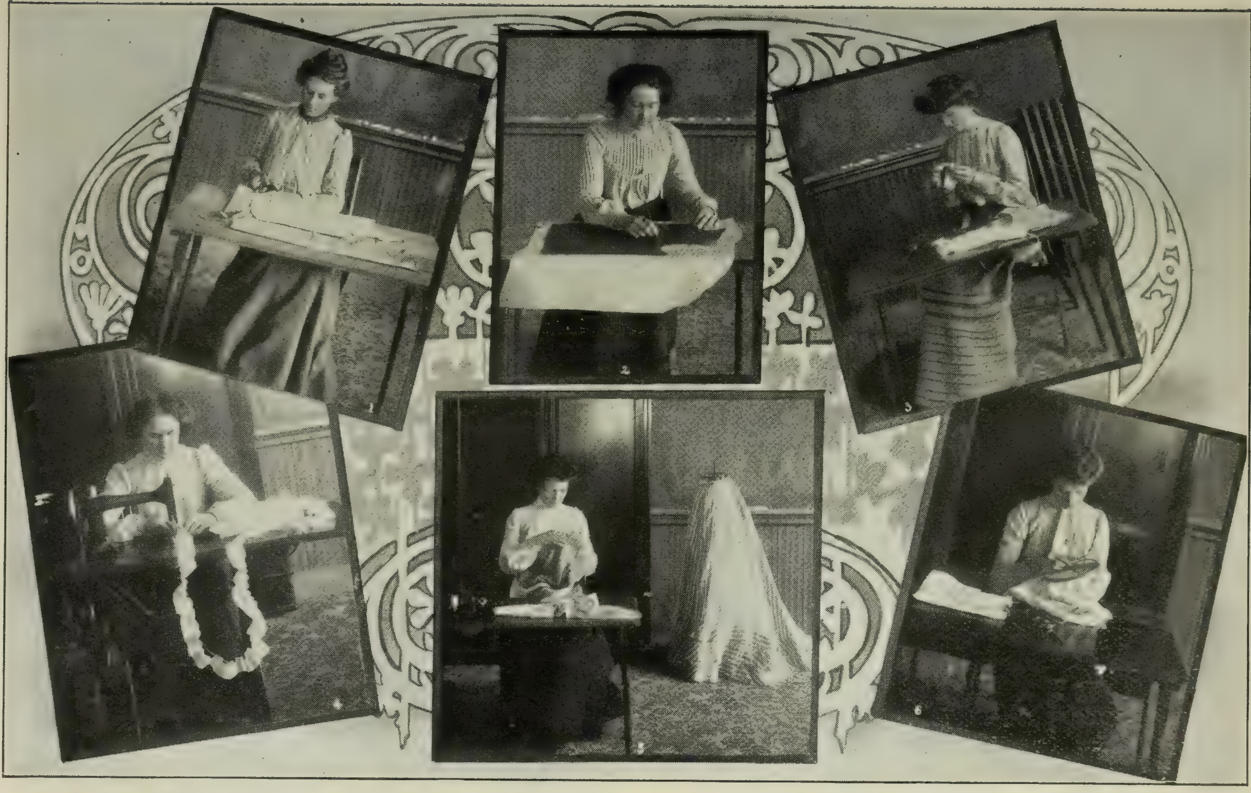
Wood-Working Machine Room.

1. Student at Forge. 2. Student at Bench. 3. Apparatus Used in Irrigation Investigations. 4. Students Making Flumes for Irrigation Investigations. 5. Students in Civil Engineering.

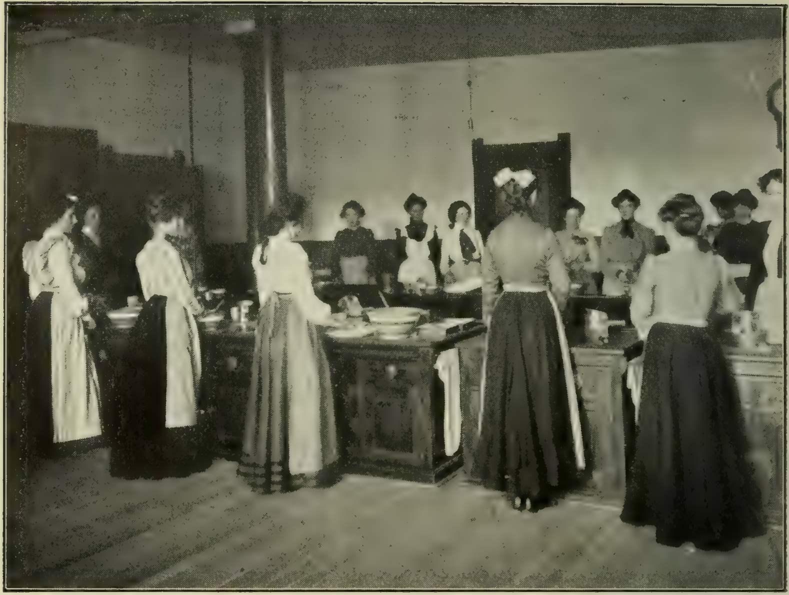


SAMPLE EXERCISES OF STUDENTS IN MECHANIC ARTS.

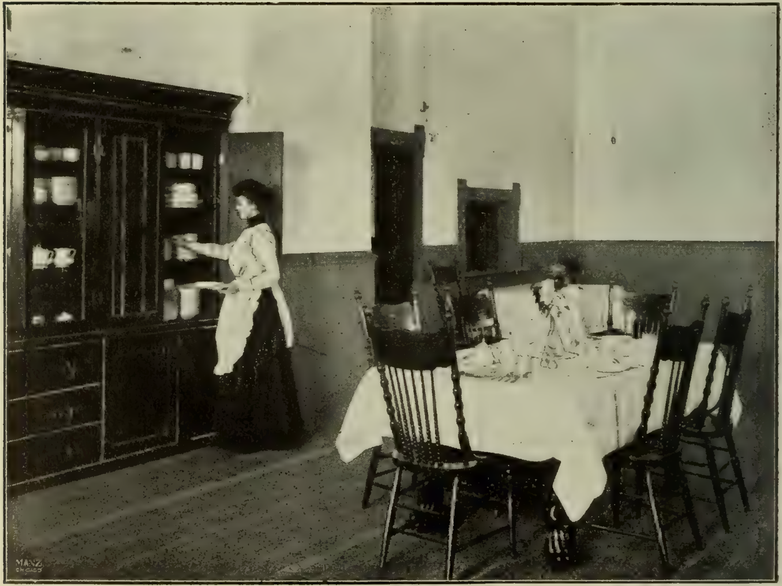
1. Samples of Cake and Bread Made by Students. 2. Fruit Bottled by Students. 3. Student Making Bread. 4. Making Pie. 5. Laundering a Skirt.



Views in College Sewing Rooms.
1. Cutting. 2. Draughting. 3. Piece Work. 4. Machine Work.
5. Dressmaking. 6. Fancy Work.



View in College Kitchen.


MANZ
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Corner of College Dining Room.

View in Sewing Rooms.

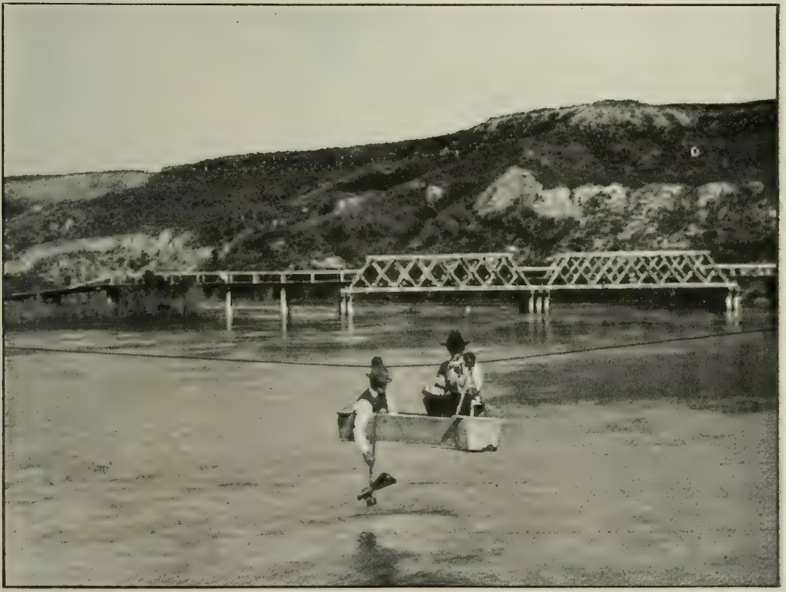
TELLER
CASHIER

View in Commercial Rooms.

Section of Commercial Room.

Typewriting Room.

CIVIL ENGINEERING—DRAUGHTING ROOM.

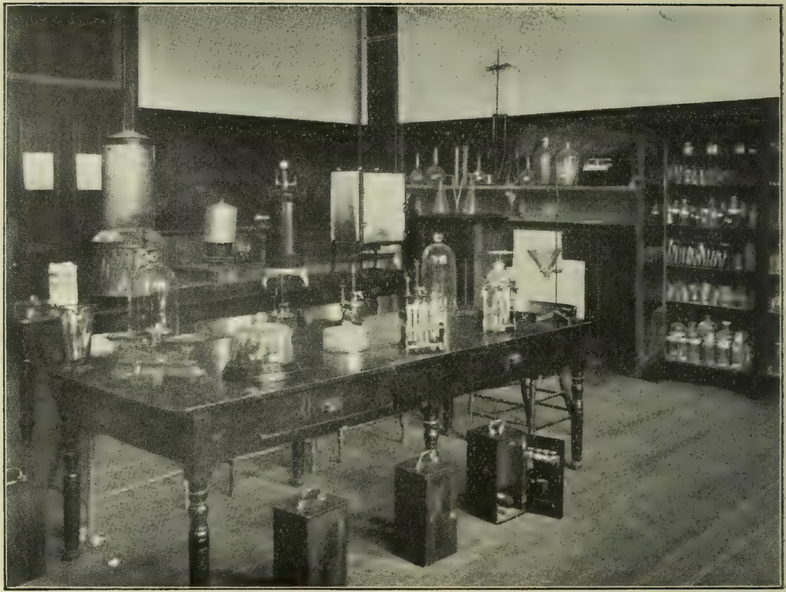


ENGINEERING STUDENTS MEASURING FLOW OF WATER.

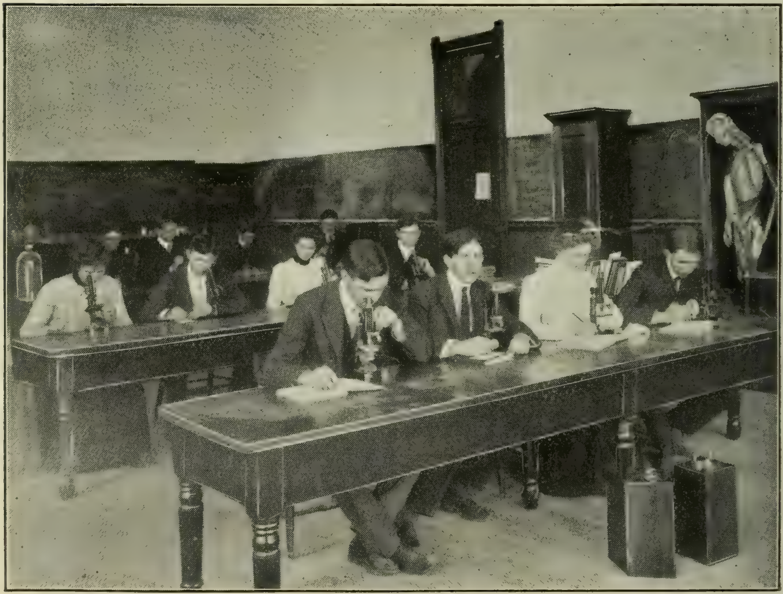
Chemical Laboratory.

Section of Mineralogical Laboratory.

Section of Mineralogical Museum.



Bacteriological Laboratory.

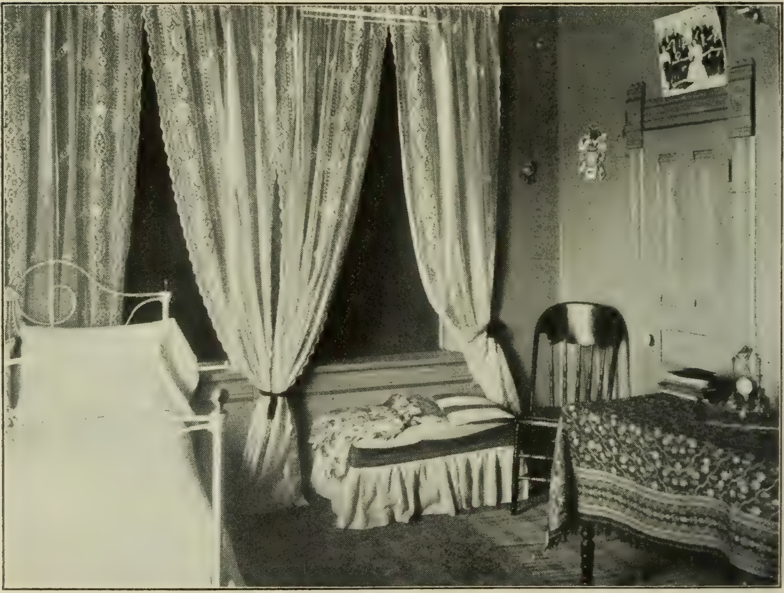


Biological Laboratory.

SECTION IN BOTANICAL LABORATORY.

COLLEGE DORMITORY.

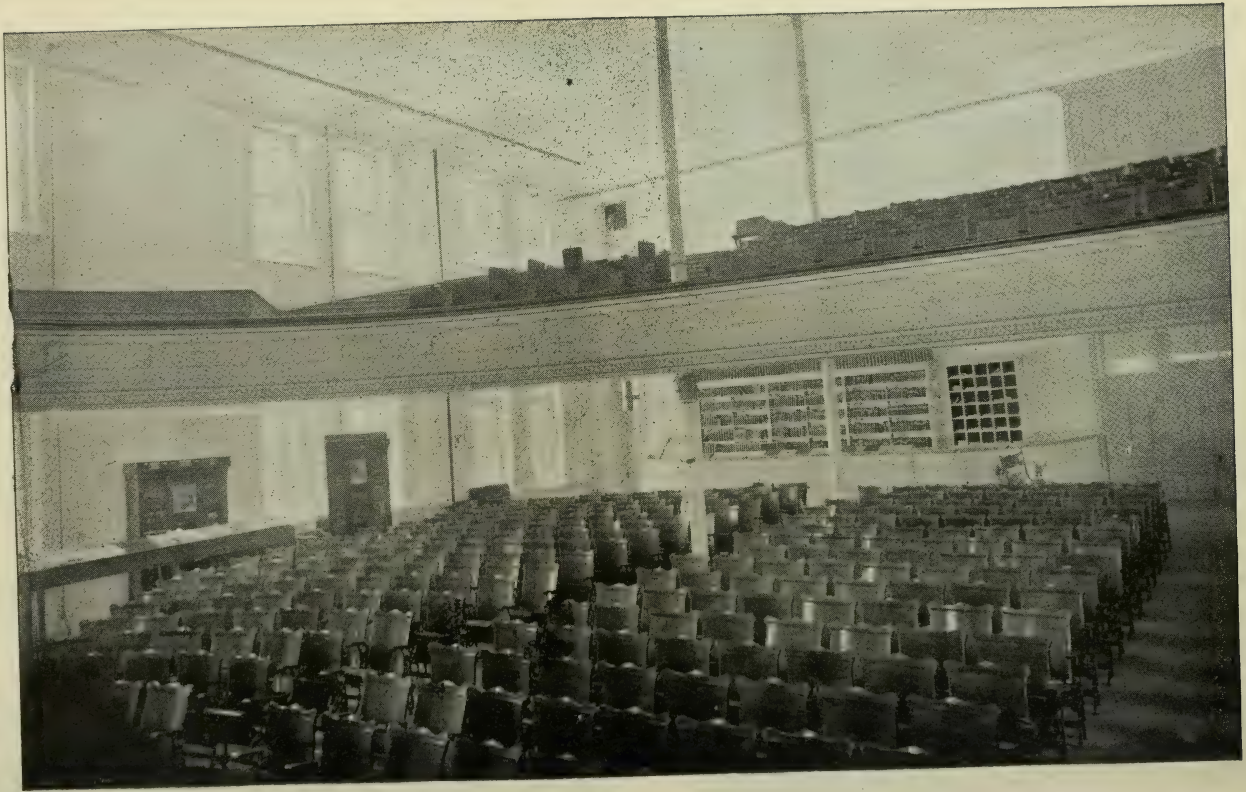
Reception Room—College Dormitory.



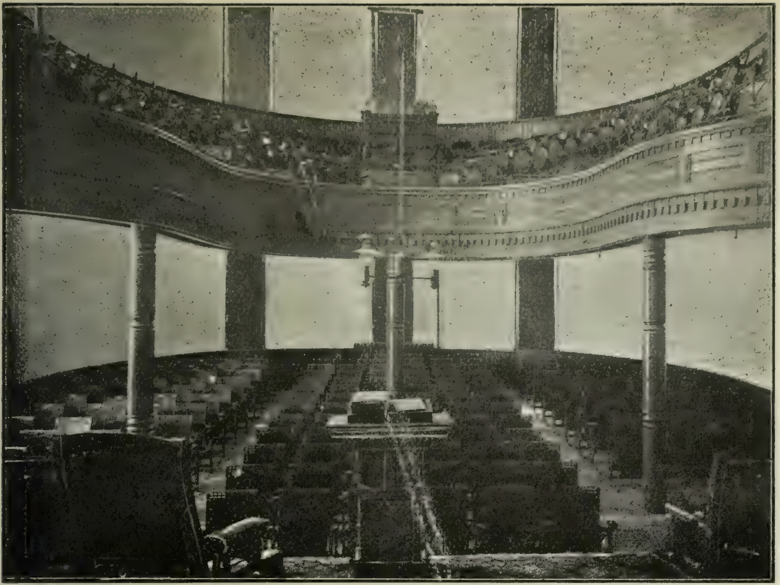
Students Room—College Dormitory.

Residence of the President.

Residence of Director Experiment Station.



Auditorium.



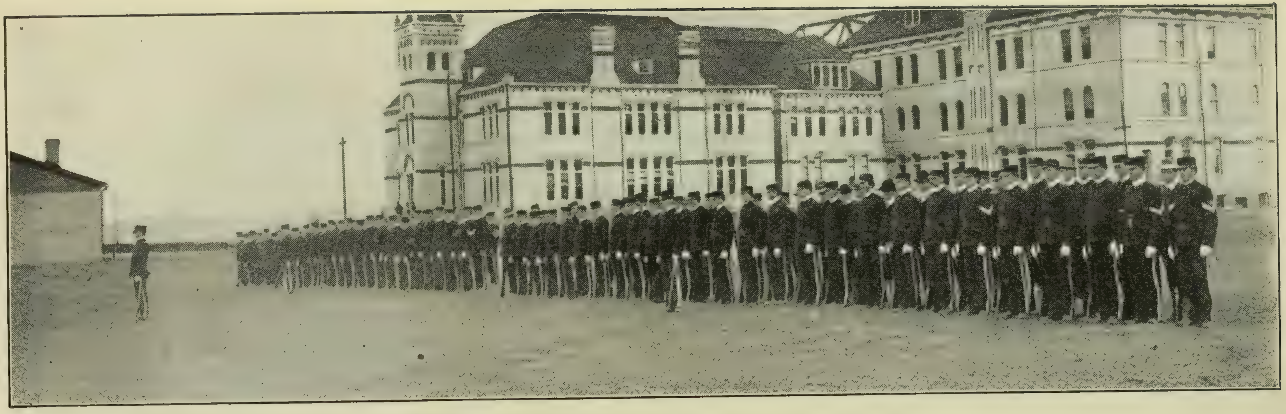
Society Hall.

Faculty Room.

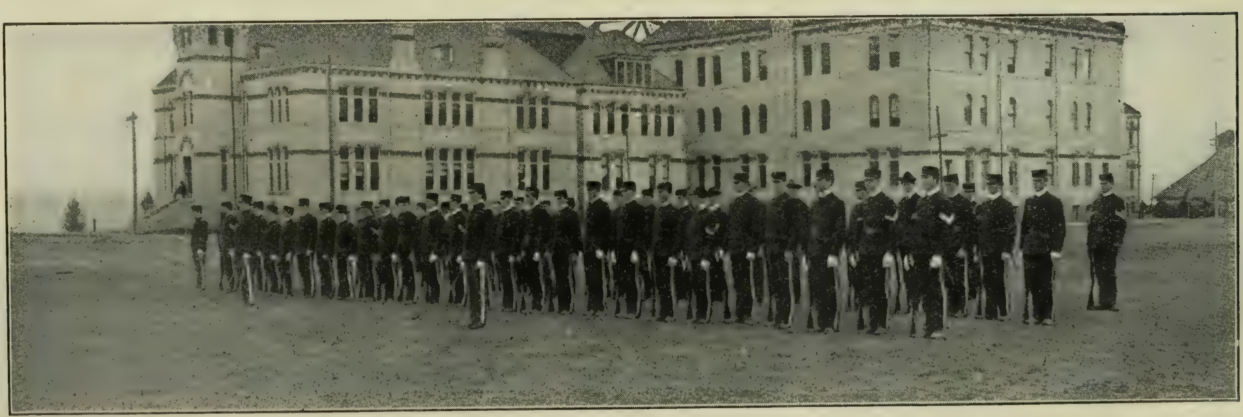
Corner in Library.

Section of Reading Room.

Military Officers and Band.



College Cadets—Battalion.



College Cadets—Company A

PHYSICAL CULTURE.

College Football Team.

A.C.U.
SECOND TEA
19

Second Football Team.

the mind and eye and hand must together be trained in order to secure symmetrical development. The object is to inculcate habits of industry and thrift, of accuracy and reliability, and to foster all that makes for right living and good citizenship.

LOCATION.

The Agricultural College is located in Logan, Utah, the county seat of Cache County, which is one of the most prosperous agricultural counties in the state. The city has a population of about 6,000; it is noted for its freedom from vice, is quiet, orderly, clean, and generally attractive, with neat homes, good, substantial public buildings, electric lights, and water system; the citizens are thrifty and progressive. The College is beautifully situated on a broad hill overlooking the city one mile east of Main street, and commands a view of the entire valley and of its surrounding mountain ranges. The beauty of the location is perhaps unsurpassed by that of any other college in the country. A few hundred yards to the south is the Logan river, with its clear water and luxuriant grasses and shrubs. A mile to the east is a magnificent mountain range and a picturesque canyon. In other directions the towns and farms covering the green surface of Cache Valley, and seen through the clear atmosphere, constitute a delightful and impressive panorama. The valley is a fertile, slightly uneven plain, 4,500 feet above sea level, about twelve by sixty miles in dimensions, almost entirely under cultivation, completely surrounded by the Wasatch mountains, and one of the most beautiful and healthful valleys in the western region.

BUILDINGS AND GROUNDS.

The College buildings comprise the Main Building, the Experiment Station Building, the Mechanic Arts Building, the Dormitory, the Conservatory, the Veterinary Laboratory, three barns, the Poultry Building, and residences for the President of the College, the Director of the Experiment Station, and the Farm Superintendent, and cottages for farm laborers.

THE MAIN BUILDING is constructed of brick and stone. It is 360 feet long, 200 feet deep in the central part, and four stories in height. It is heated by steam and lighted by electricity in every part. The rooms are light and pleasant, and the halls spacious, extending on each floor the entire length of the building. This building contains the large auditorium, with a seating capacity of about 1,500; a small auditorium, or society hall, which will seat 400; the administrative offices; the library and reading rooms; the gymnasium; the agricultural, the biological, the botanical, the chemical, and the physical laboratories, museums and lecture rooms; the Station chemical laboratories and museum; the office and the class rooms of the commercial department; the sewing and millinery rooms, the laundry, kitchen, and dining rooms; the museum, and the offices of the department of domestic science; the dairy rooms; the armory and drill hall; the offices and class rooms of the department of civil engineering; and the class rooms for English, mathematics, modern languages and art.

THE EXPERIMENT STATION BUILDING is a brick structure, 45 feet long and 35 feet wide, two stories in height. It contains the laboratories of the Entomologist and the Horticulturist; the offices of the Director of the Station, the Agronomist, the Horticulturist, and the Poultry Manager; the mailing room; and a dark room for photographic work.

THE MECHANIC ARTS BUILDING, situated south of the Main Building, is 220 feet long by 40 feet wide, with the central part, 40 feet wide, extending back 120 feet. It is one story high, except the central front part, which is two stories. The walls of brick, and the roof of corrugated iron. The building is heated by steam, and is well lighted and ventilated throughout. It contains the power room, the forge room, the carpentry, or bench room, the machine shops for wood and metal, and the office and class rooms of the director of manual training.

Adjoining the Mechanic Arts Building is a *store room*, 40 by 27 feet, two stories high.

THE DORMITORY is a brick and stone structure, 50 feet wide by 80 feet long, four stories in height. It contains thirty-three rooms for students, each 12 by 14 feet, exclusive of closet; a reception room for students, 19 by 27 feet; a model kitchen; a dining room; a pantry, supplied with all modern conveniences; a laundry room; bath rooms; and rooms for the matron and for the employees. The rooms of this building are well lighted and ventilated, each room having two registers for ventilation.

THE CONSERVATORY is of the most modern type, 90 by 25 feet, and is filled with beautiful flowering and ornamental plants. There are three compartments of equal size, one for semi-tropical plants, such as ferns, palms, bananas, etc., one for roses, and one for carnations and other plants. The equipment is used to supplement class work in botany, floriculture, and horticulture.

THE VETERINARY LABORATORY building, situated several hundred yards to the rear and east of the main College building, is a stone and frame structure, 18 feet wide and 42 feet long, two stories in height. It contains a dispensary, an operating room, stalls, etc. It is heated by steam.

THE BARNS. There are three barns, one for horses, one for cattle, and one for sheep. The *horse barn* is a wooden structure, 60 feet square, and contains model sanitary stables for horses, besides storage divisions for hay, grain, and seeds, and rooms for carriages and wagons, farm implements, and machinery; also the farm foreman's room and repair shop. A ten-horse power electric motor furnishes power for grain threshing, feed grinding, and fodder shredding. The *cattle barn* is 106 feet by 104 feet. It is provided with the most modern equipment throughout, including iron stalls, cement floors, mangers, etc. There are accommodations for seventy-five head of cattle; also hospital rooms, feed rooms, a milk room, a root cellar, and storage room for hay and grain. The *sheep barn* is a modern building, 94 feet by 41 feet in dimensions, with accommodations for seventy-five sheep, and storage room for feed.

THE POULTRY BUILDING is 130 feet long and 10 feet wide, divided for experimental purposes into twenty-two pens. This building is provided with a hot water heating system for winter, also a boiler for cooking food, and an incubator cellar. There are four different makes of incubators and brooders, a bone mill, clover cutter, and other necessary appliances of a modern poultry plant. The principal breeds of poultry are kept, representing the American, Mediterranean, and Asiatic classes.

The land occupied by the College and its several departments embraces about 111 acres. Of this, thirty acres constitute the CAMPUS, which is tastefully laid out and adorned with flower-beds, and individual specimens and groups of ornamental shrubs and trees, both evergreen and deciduous. There are broad stretches of lawn, and wide drives and walks leading gracefully from various parts of the Campus to the College buildings. During the summer the conservatory contributes its hardy plants for lawn decoration.

Immediately east of the main building are the parade grounds and athletic field of about ten acres. The farms comprise 71 acres; the orchards, the forestry, the vineyards, and the small fruit and vegetable gardens, ten acres. All parts of the College grounds are used by the professors in charge of instruction in Agriculture and Horticulture for the purpose of practical illustration in their respective departments; they are also used for the work of the Experiment Station.

EQUIPMENT.

The Department of Agronomy is provided with a large collection of agricultural plants and seeds, and other illustrative material. The agricultural laboratory is equipped with balances, a self-registering dynamometer, an appliance for measuring the resistance to tractive force of incline and obstruction, a double-tree hitch apparatus, horse calipers, apparatus for determining the water-holding capacity of soils, specific gravity of soils, etc. There is also a model of a horse arranged for determining, by experiments, the influence on draft of direction of traces, weight of horse, strength of hock muscles, etc. An apparatus has been provided to demonstrate the influence of head diameter, length and bends on the rate of discharge of water through lines of tile and water pipe. The College farm is equipped with the best farming implements and machinery, including plows, cultivators, planters, cutters, shellers, grinders, a binder, a threshing machine, an electric motor, etc. For illustrative and experimental purposes, the farm is divided into numerous plats, on which different classes and varieties of farm crops are grown.

For the work in Animal Industry, general use is made of the College barns, live-stock, dairy, etc. The live-stock consists of Clydesdale and Shire draft horses; Hereford, Short Horn, Holstein, and Guernsey cattle; Shropshire, Cotswold, and Merino sheep. A live-stock class room is provided, where the animals may be brought before the class for inspection and criticism. The Dairy occupies a floor space of about three thousand square feet, which is divided into seven rooms for the various processes of dairy work. The department is equipped with the apparatus necessary for all the processes of butter and cheese-making and milk testing. For butter-making there are milk vats and heaters, hand and power separators, hand and power churns, a combined churn and worker, and a Mason butter worker. For cheese-making there are four vats, gang and upright presses, and a curing room. Ample facilities are provided for illustrating the handling of milk for the milk trade, including the Star milk cooler, an intermittent pasteurizer, etc. The milk testing laboratory is as well equipped as any similar laboratory in the country. There are two steam and two hand Babcock testers, and nearly every type of Babcock test apparatus and glassware. There is also apparatus for testing the acidity of milk or cream, and a delicate balance, used in testing cheese and butter. The department has an eight-horse power boiler and a six-horse power engine, and model cold storage rooms for butter and cheese. The model poultry house and equipment afford special facilities for illustrative and practical experimental work with poultry.

The Botanical Laboratory has a good supply of apparatus with which to do systematic and microscopic work. The herbarium contains 3,000 mounted and named specimens to which the students have access at all times. There are 700 samples of economic seeds for use in economic botany. The general equipment includes a compound microscope for each student's use;, 15 Bausch and Lomb dissecting microscopes; microtome; hand section cutters; stains; slides; and everything necessary for successful botanical work. The orchard, with over 300 varieties of apples, pears, peaches, plums, apricots, and cherries; the vineyards with 60 varieties of grapes, including the hardy and tender, or California, kind; the forestry experiment, containing many kinds of hardy trees and shrubs; and the small fruit and vegetable gardens, are all used in connection with the work in botany and horticulture for practical illustrative purposes.

THE VETERINARY LABORATORY is supplied with surgical instruments, a modern operating table, an operating room, box stalls for patients, the necessary medicine, etc. Among the more important surgical instruments are a complete set of dental instruments, mouth speculum, tracheal and roaring instruments, neurotomy set, thermo-cautery, castrating and spaying instruments, obstetrical and parturition instruments, postmortem and diagnostic instruments, and other material found in a well equipped hospital. In this laboratory the agricultural students have practice and observation in the treatment of animals.

THE DEPARTMENT OF DOMESTIC SCIENCE AND ARTS is located in the Main Building, occupying the first floor of the south wing, besides several rooms in the basement. On the first floor are the office and reception room; a large lecture room; a laboratory and museum room, provided with cabinets, charts, and about three hundred specimens showing the composition of food materials and the processes of their manufacture; and sewing rooms, furnished with the latest improved machines, small sewing tables, low chairs, cutting tables, tracing boards, electric stone for pressing iron, wardrobes and cupboards for holding unfinished work, and large display cabinets. On the basement floor are five rooms, including the kitchen, which contains individual combined work tables and cupboards, gas stoves, three coal ranges, an Aladdin oven, an electric stone, utensils, and other modern conveniences for teaching cooking; a dining room, furnished with extension tables, dining room chairs, sideboards, cupboards and a generous supply of silver and table linen; a laundry room, with stationary tubs, Chicago clothes drier, and other accessories.

THE COMMERCIAL DEPARTMENT is completely equipped for thorough and efficient work in modern business courses. The rooms are the largest and most complete of any commercial school in the west. The entire third floor of the front of the Main Building is occupied by the department, covering a floor area of 7,225 square feet. Each room is specially designed and furnished for the work to be conducted in it. The furniture of the department consists of hard wood counting room desks and counters, arranged in such a way that students may either sit or stand while at work. A complete set of modern banking fixtures, a wholesale house, a retail house, a freight office, a real estate office, and an insurance office, with permanent blank books, letter files, rubber stamps, copying presses, college currency, blanks, etc., are provided by the College. The room for typewriting contains twenty-one machines—ten Remingtons, seven Smith Premier, three Underwood, and one Hammond—each provided with a regular typewriting stand and copyholder. The room for stenography is furnished with tables designed for convenience in practice work in stenography. The penmanship and general class room is seated with single desks.

THE CIVIL ENGINEERING DEPARTMENT is well equipped with instruments and apparatus for field practice in all the courses offered by the department. For the work in surveying there are two first-class transits, two levels, a Johnson plane table, a planimeter, a clinometer, and other supplementary instruments, together with a full supply of chains, tapes, etc. For the work in hydraulics, the equipment includes a number of water meters of different kinds, a hook gauge, water registers, etc. The excellent equipment on the experiment farm in the shape of measuring apparatus, and the many canals, rivers, and power plants in the immediate vicinity, afford excellent opportunity for very thorough training in hydraulic work. The drawing room is equipped with modern drawing desks and such other accessories as are needed for the office work. In the library are to be found a number of standard reference books in the various lines of engineering, and the standard professional periodicals are also available to the students.

THE MECHANICAL ENGINEERING AND MECHANIC ARTS DEPARTMENTS are well equipped for all of the courses offered.

The bench room is provided with forty-five carpenters' benches, with full equipment of tools. In the forge room are twenty-four power blast forges, with anvils and complete tool equipments; also hand-drills, cutting-off machines, tire upsetter, special swageblocks, etc. The wood-working machine room is supplied with nine ordinary turning lathes, one large turning lathe, one jig-saw, one universal saw-table, one wood planer, one new two-spindle shaper and moulder, one band saw, one power mortiser and borer. In the iron-working machine room there are three large engine lathes, one speed lathe, one large drill press, one sensitive drill (made by students), one large iron planer, one universal milling machine, emery wheels, vises, and tool cutters of various kinds.' For experimental work in power measurements a ten-horse power Flather hydraulic dynamometer is used.

THE BIOLOGICAL LABORATORIES are located on the first floor, with east and north exposures. They are well equipped for experimental work in the various courses in which the department offers instruction. The equipment includes, high-power Leitz, and Bausch and Lomb microscopes; dissecting microscopes; condensers; microtome; autoclav, anaerobe plate apparatus, anaerobe tube apparatus, freezing apparatus; micrometers; micro-spectroscope; photo-micrographic camera; Thoma-Zeiss haemacytometer; hot air and steam sterilizers; incubator; refrigerators; paper and plaster manikins; a series of plaster models (human); analytical balance; a varied collection of microscopic slides; a well selected stock of microscopic glassware; utensils, dissecting instruments, media, and reagents.

THE CHEMICAL LABORATORIES occupy the second floor of the north wing of the Main Building, which include ten rooms. One large room is devoted to the work in general chemistry and qualitative analyses, and two smaller rooms to work in organic chemistry and quantitative analyses. A pleasant room, centrally located with respect to the laboratories, is used as the lecture room of the department. Adjoining the main laboratory and the lecture room are a large store room, and a preparation room for the use of the instructor. On the east side of the wing, two large rooms and a store room are used for the work carried on by the Chemical Department of the Experiment Station. A room in the basement is used for the work in fire assaying.

The chemical laboratories are well equipped for elementary and advanced work in chemistry. In the College laboratories especial provision is made for the elementary study of the science. Individual desks, fitted with drawers and cupboards, and a very complete assortment of chemical glassware and chemicals, render the work in the laboratories easy and pleasant. There are also several valuable collections of gums, oils, coloring matters, foods, etc., that are important aids to the students in this department. The laboratories of the Experiment Station are excellently equipped for advanced work. The extensive collection of apparatus includes, among other things, balances; silver calorimeter; half-shade polariscope; several sets of hydrometers; thermometers; spectroscope; vacuum pan; filter press; apparatus for gas and microchemical analysis; a large supply of platinum ware; several models of elutriators; a very complete set of apparatus for food and fodder analysis; stirring apparatus; steam and hot air drying ovens; microscopes; appartus for soil analysis; and a large supply of Jena glassware, and chemically pure reagents. The laboratories are fitted with water, gas, hoods and all other conveniences.

THE PHYSICAL LABORATORY occupies a suite of three rooms on the second floor, which are used for class purposes and for elementary laboratory work; and a room on the ground floor, used for electrical and magnetic measurements. The equipment is fairly complete, consisting of all the necessary pieces of apparatus for class demonstration; a set of apparatus for elementary laboratory work, sufficient for sixteen students working on the same experiment; and all pieces required for an experimental course in heat and electricity. Some of the more important pieces are balances and weights by Sartorius; platform balances; an Atwood machine, with aluminum friction wheels and electrical attachments; centrifugal apparatus; working models of levers and pulleys; air pumps; thermometers in different scales; barometers; hydrometers; hydraulic press; porte lumiere; telescope; microscope; an assortment of lenses, mirrors, and prisms; spectroscope; sonometer; siren; tuning forks; organ pipes; Chladni's plates; electric static machine; Leyden jars; electroscope; electrophorus; magnetometer; galvanomters of tangent, sine, balastic, astatic, and D'Arsonval types; Wheatstone bridges, both box and wire forms; resistance boxes; standard resistance and standard cell; primary and storage cells of various kinds; Ruhmkorff coils; electric generators and motors; Crooke's tubes and Geissler tubes.

THE COLLEGE MUSEUMS are supplied with a large number of specimens illustrative of geology and palaeontology, vertebrate and invertebrate zoology, mineralogy; also about four thousand five hundred species of the Rocky Mountain flora, and a large number of the woods of the United States. There is also an extensive collection of grains, representing the produce of Utah and other states. A small collection of Indian and Polynesian products and curiosities has been made. Contributions of fossils, ores, animals, relics, or other material of value to the museums will be highly appreciated. All gifts are labeled and preserved, and the name of the donor is kept on record.

THE ART ROOMS contain many valuable casts, most of which are reproductions of the works of the masters, together with many smaller casts suitable for the more simple work in drawing. A few reproductions of the paintings of the masters have been purchased, and the charts to be used in the work in design; also the tables, drawing boards, and cases necessary for the work.

THE LIBRARY occupies the entire second floor of the new front part of the Main Building. Besides the Librarian's office and cataloguing-room, there are the stack-room, 32 by 68 feet, sufficiently high for two stories of bookstacks, with a capacity of between forty and fifty thousand volumes; and the main reading room, 52 by 74 feet. In the stack-room, the book-stacks are so arranged as to form department alcoves, which are abundantly lighted and well ventilated, and will be used as study rooms. The library contains about 10,500 bound volumes, and 11,000 pamphlets. Additions are made from time to time to meet the requirements of the several departments. The subjects covered are general literature, including poetry, fiction, and criticism; history, travel, biography, political economy, and sociology; mental and moral philosophy; commerce, engineering, natural science, agriculture, domestic science and art.

THE READING ROOM is provided with racks and shelves for newspapers and other current serials, and with reading-tables. Ninety of the best literary, scientific, technical and agricultural periodicals are taken by subscription. Through the liberality of the publishers, forty-seven of the Utah newspapers are regularly received; and ninety-four of the best agricultural papers of the country are sent to the library in exchange for the publications of the Experiment Station. These are all placed in the reading room for the use of readers. The principal dictionaries and enclyclopedias, including the Encyclopedia Britannica, American Cyclopedia, Appleton's Cyclopedia of American Biography, Allibone's Dictionary of Authors, Encyclopedic Dictionary, Century Dictionary, are kept in cases in the reading room within easy access of the readers.

THE AGRICULTURAL EXPERIMENT STATION.

THE AGRICULTURAL EXPERIMENT STATION is a department of the College, supported mainly by Congressional appropriations, supplemented by the receipts from the sales of farm products. The Station was created for the special purpose of discovering new truths that may be applied in agriculture, and of making new applications of well established laws. It is, therefore, essentially a department devoted to research; and as such, it does the most advanced work of the College.

The Experiment Station is not, in the ordinary sense, an institution where model farming is carried on. It has a much higher purpose. The practices of the farmer, good and bad alike, are subjected to scientific tests, in order to determine why the one is bad and the other good. Acting on the suggestions thus obtained, new lines of investigation are begun, with the hope that truths of great value to the farmer may be discovered.

The Station has for its present object the study of the underlying laws of irrigation. On the farm, in the orchards, gardens, and barns, experiments are going on that, in time, will lead to the establishment of an art of irrigation that will be based on laws developed by scientific methods. Investigations for the purpose of encouraging the horticultural, dairy, and poultry industries, are also in progress.

The Experiment Station has a high educational value. Nearly all the members of the Station Staff are also members of the College Faculty, and the students, therefore, receive directly, and at first hand, an account of the methods and results of the work of the Station. On the farm, in the gardens, orchards, barns and laboratories, the students receive training in the application of scientific truths in the practical affairs of men. The opportunities that the Experiment Station offers for advanced work in several branches of science are of great importance. The methods of science have been carried into the operations of every human occupation; and the more fully scientific methods of accuracy, persistence, and adjustment are understood by a man, the greater, as a rule, will be his success in any walk of life. The scientific method and spirit characterize all the operations of the Station, and none can fail to be benefited by a study of the experiments that go on at all times of the year.

The Station Staff are always glad to assist the advanced students of the institution in any investigations they may wish to undertake.

COLLEGE SOCIETIES.

Six different societies are maintained by the students of the College, and afford opportunity for drill in parliamentary practice, and for training in declamation, debate, and essay writing. The SOROSIS SOCIETY for women only; the OLYMPIA CLUB for men only; and the PROGRESSIVE SOCIETY for both men and women, are primarily literary organizations. A public debate between two of the societies is occasionally arranged, thereby stimulating the students to greater literary and oratorical effort. The AGRICULTURAL SOCIETY is an organization of instructors and students interested in agricultural education. This society is open to all students, and is becoming a potent factor in the development of the agricultural work of the College. The ENGINEERING SOCIETY is organized for the advancement of the interests of the engineering students. Meetings are regularly held for the purpose of listening to addresses upon important phases of engineering work, and for the discussion of various engineering problems.

THE ATHLETIC ASSOCIATION is organized for the promotion of the general physical culture of the students, and the encouragement of a proper spirit in favor of hearty, manly sports. This association is sustained with universal interest, and constitutes an important means of physical education.

STUDENTS' EXPENSES

Tuition is free. Students pay an annual entrance fee of $5. The privileges of the library and museum are free. In the laboratories, workshops, cooking rooms, and in typewriting, students are charged an incidental fee to cover the cost of materials used by them in their exercises. With proper care this expense need not exceed from $2 to $5 per year in each course.

The fee charged for a certificate of graduation is $2.50; and for a diploma $5. Students are held responsible for any injury done by them to the College property.

Good board and rooms can be obtained in private houses for from $2.50 to $3.50 per week. By renting rooms and boarding themselves, students are able to reduce the cost of room and board to less than $2 per week.

THE COLLEGE DORMITORY has accommodations for sixty. The second floor is used exclusively for women, and the third floor for men, there being no communicating passage between the two. Each floor has bath room and toilet accommodations. The cost of room and board, including fuel and light, is from $13 to $15 a month, according to the kind of room used. Students furnish their own bedding; also rug or carpet, if desired. Board is payable in advance every month. The Dormitory discipline corresponds as nearly as possible to that of home life. Boisterous and rude conduct is not allowed. Parents or guardians of students in the Dormitory receive a monthly report. For particulars regarding Dormitory accommodations, address Mrs. Karl R. Moench, Agricultural College, Logan, Utah.

Admission and Graduation.

CONDITIONS OF ADMISSION.

Candidates for admission to the Preparatory course, and to the Manual Training courses in Domestic Arts and Mechanic Arts, must be at least sixteen years of age; to all other courses, fifteen. Students are admitted to the Preparatory Course and to the Manual Training courses without examination, except such as may be necessary in order to determine the section in which they can work to the best advantage; the classes in these courses being divided into sections, which are graded in such a way as to be especially adapted to those who are not prepared to enter any of the more advanced courses.

Graduates of the district schools, and those who have completed the Preparatory course of the College, are admitted without examination to the Engineering Preparatory Course, and to the three year courses in agriculture, domestic science, and commerce. Other applicants for admission to these courses must pass a satisfactory examination in the subjects of the Preparatory Course.*

Students who have completed the Engineering Preparatory Course are admitted without examination to the engineering courses, and to the General Science Course. They are also admitted without examination to the four year courses in agriculture, domestic science, and commerce, being conditioned in the technical work preceding the freshman year in the course taken.

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*For a description of these subjects, see Preparatory Course.

Students who have completed the first two years of the three year courses in agriculture, domestic science, or commerce, are admitted without examination to the regular four year courses in agriculture, domestic science, or commerce, respectively. They are also admitted without examination to the engineering courses, the Mechanical Engineering Course, and to the General Science Course, being conditioned in any of the subjects not already completed of the Engineering Preparatory Course.

Those who have completed any of the three year courses are admitted without examination to the sophomore year in the corresponding courses leading to degrees. Students may transfer from one regular course to another by making up all the technical work not completed of the course to which they transfer. Students will be allowed to substitute technical work of one course for that of another, only by permission of the Faculty.

Other students are admitted to any of the courses leading to degrees, either upon the certificate of accredited schools, or upon satisfactory examination in the subjects of the Engineering Preparatory Course. For a description of these subjects, see "Engineering Preparatory Course" and "Departments of Instruction." By permission of the Faculty, students may be allowed upon entrance to substitute work in other courses for Drawing 1, History 2, Carpentry 5, and Forging 4a. Certificates from schools not accredited will be considered as the merits of each case may warrant.

Candidates for admission to advanced standing are required to pass satisfactory examinations in all the work of the preceding years, or to present satisfactory evidence of having completed an equivalent of such work in some other school or college.

SPECIAL STUDENTS.

Persons of mature years who, for satisfactory reasons, desire to pursue a special line of study, may be admitted as special students, provided they give evidence of ability to do the work desired. Special students may be allowed to graduate in any of the courses, on condition that they complete the required work and pass the necessary examinations.

REGISTRATION.

All students register at the beginning of the collegiate year for the work of the whole year. Changes in registration, and credit for work not registered, will be allowed only by special permission of the Faculty.

CLASSIFICATION.

All regular students are classified as first, second, and third year students in Agriculture, Domestic Science, Manual Training in Domestic Arts, or Commerce; or as first and second year students in the Engineering Preparatory Course; or as first, second, third, and fourth year students in the Manual Training Course in Mechanic Arts; or as freshman, sophomore, junior, and senior students in any of the four year courses leading to degrees; according to the lowest year in which they have subjects, provided such subjects are equivalent to one-third of all the work taken; otherwise in the next year above.

GRADUATION.

Students who complete the three year courses in agriculture, domestic science, commerce or manual training in domestic arts, or the four year course in manual training in mechanic arts, receive certificates of graduation. The degrees of Bachelor of Science, Bachelor of Science in Agriculture, Bachelor of Science in Domestic Science, Bachelor of Science in Commerce, Bachelor of Science in Civil Engineering, Bachelor of Science in Mechanical Engineering, Bachelor of Science in Electrical Engineering, and Bachelor of Science in Mining Engineering, are conferred upon those who complete the regular four year courses in General Science, Agriculture, Domestic Science, Commerce, Civil Engineering, Mechanical Engineering, Electrical Engineering, and Mining Engineering, respectively.

To obtain a degree, the student must complete an equivalent of sixteen hours of class work weekly for four years. Three hours of laboratory work count as one hour of class work.

Instructors keep a record of recitations, marked according to the decimal system. In making up final examination percentages, this is counted one-third, written papers during the term, one-third, and final examination for the term, one-third. In all courses, an average standing of not less than 75 per cent., with no grade less than 60 per cent., is required for graduation.

Students who completed the work of the freshman, sophomore, or junior year in 1901-1902 will be allowed to continue their courses and graduate upon completion of the amount of work required at the time of entrance.

Courses of Study.

The College offers the following courses: (1) Agricultural Course, four years; (2) Domestic Science Course, four years; (3) Commercial Course, four years; (4) Civil Engineering Course, four years; (5) Mechanical Engineering Course, four years; (6) Electrical Engineering Course, four years; (7) Mining Engineering Course, four years; (8) General Science Course, four years; (9) Agricultural Course, three years; (10) Domestic Science Course, three years; (11) Commercial course, three years; (12) Manual Training Course in Domestic Arts, three years; 13) Manual Training Course in Mechanic Arts, four years; (14) Engineering Preparatory Course, two years; (15) Preparatory Course, one year; (16) Special Winter Courses in Agriculture, Domestic Arts, and Mechanic Arts.

THE AGRICULTURAL COURSES are arranged especially for the general education and scientific training of agriculturists. In arranging the work of instruction in the three year course, the first purpose kept in view has been to meet the needs of that large class who expect to make the farm their home. The agricultural work begins in the first year, and continues through the second and third years, making a fairly complete practical course. Those who can attend only one, two, or three years, will thus be made acquainted with facts and principles that cannot fail to help them in their farm work. Thorough courses are also given in English and mathematics, with sufficient elementary science to enable the student readily to comprehend the agricultural work given.

In the advanced course leading to a degree, the student is given that fundamental knowledge of science which will enable him to understand and grapple with the deeper problems in agricultural practice. In the junior and senior years the student is allowed to specialize either in Agronomy, in Animal Industry and Dairying, or in Horticulture. Those who complete this course are qualified to take positions as teachers and assistants in colleges and experiment stations, or as managers of large farms. This course, however, is designed not only to give special agricultural training, but to give a broad scientific education. The farmer in America is both proprietor and manager of his farm, and is, moreover, a citizen in a country where the citizen is sovereign. The education of such a man should be broad and suggestive. The Agricultural Course, as arranged, brings the student into contact with nearly all the specialists of the College, and opens to him many fields that invite future study and research.

The course is not arranged as a manual training course. As practically all the students are from the farm, it is assumed that they are acquainted with the various manual operations of farm work. The aim is, therefore, to supplement this work by that technical training which, as a rule, the farm does not afford. Special emphasis is laid on the training of the faculties of observation, reason, and judgment; and from the first year of the course the student is made acquainted with those matters that will enable him to study profitably and with interest the best books and papers on agricultural topics.

The general and department libraries enable the student to become acquainted with a wide range of agricultural and related literature, while the laboratories of the College and the experiment station afford opportunity for training and experience that it would be impossible to get from books. The outline of the course and the description of the studies prescribed, will give a fuller understanding of the work offered.

A WINTER COURSE in agriculture is provided, designed to meet the needs of young men of mature years, who desire to follow some agricultural pursuit, and who, though feeling the need of more thorough preparation for their work, can devote only the winter season for such preparation. The subjects presented are those about which every one engaged in agricultural pursuits should have a definite knowledge. They embody the underlying principles and the best practice. The class room instruction is supplemented by practice in the live-stock judging room, veterinary hospital, College dairy, agricultural and horticultural laboratories and greenhouses, and by visits of inspection to herds and farms and other places of interest.

The courses in DOMESTIC SCIENCE and Arts have for their object to broaden the minds of women and enable them to meet more intelligently the home demands of modern life. When woman has learned to apply the principles of science to the problems of daily living, she will realize that housekeeping is an occupation worthy of the best efforts of the brightest minds; and that the broadest courses in science, economics, and ethics can be applied to the betterment of home life. Formerly the higher education of woman led her away from the practical interests of the home. The recent establishment of domestic science courses in many leading colleges and universities shows a public demand for education towards home life rather than away from it. This state wisely established such courses when this College was first organized; and the favor with which the work has been received by the public shows the wisdom of the plans. The Domestic Science Course has been strengthened and improved each year, and better facilities for instruction and study have been generously provided. The four year course gives the same training in mathematics, in English, and in science as is given in other courses, together with a broader culture in literature and modern languages than offered in any others, in addition to the special studies in home science, which are its distinctive features. The three year course is arranged for the accommodation of those who are unable to complete the longer course. The MANUAL

TRAINING COURSE in Domestic Arts is offered for the benefit of those young women who do not wish to take the studies of the regular college course, but desire to devote more time to the subjects of especial interest to women. Such other studies as the student is qualified to pursue may, with the consent of the Faculty, be substituted for those offered in this course.

The primary object of the COMMERCIAL COURSE is to broaden the intelligence of accountants, and prepare students for positions as business men. These form a large class, having a direct and important relation to the material, social, and political life of the nation. They should, then, have associated with their technical work a knowledge of those subjects that will give them an enlarged view of their varied relations as citizens of the state. The College, therefore, offers here a much broader general education than is common in commercial schools. The course is so arranged that students who complete the first three years, will receive a certificate of graduation, and on completion of the full course, the regular baccalaureate degree. Students who are unable to continue through the entire course, but finish the first three years, will be well prepared to do office work. The technical feature of the course is a thorough training in penmanship, typewriting, stenography, commercial calculations, bookkeeping, business economics, political economy, history of commerce, commercial law, commercial geography, constitutional and international law.

Those who expect to enter upon the profession of law will find this course affords an admirable preparation. Students who complete the course will be well prepared for positions as teachers in commercial and department schools where courses in commerce are given. The demand for thoroughly qualified teachers along this line of work is greater than the supply, and many desirable positions are open to those prepared to do the required work.

The Civil Engineering Course is designed to afford a training in those subjects which pertain to the profession of the civil engineer, in regard to different classes of structure. and public works. The theoretical portion of the instruction is based largely on the courses given in the departments of Mathematics and Physics, and the results obtained are applied to practical problems in field work and engineering designs. The first two years are devoted to studies which belong naturally to the beginning years of undergraduate study, but the last two years are devoted largely to those subjects which have a more immediate relation to professional work. Unusual opportunities are afforded the student for practical hydrographic work by reason of the irrigation experiments on the station farm and the co-operation of the department with the Division of Hydrography of the United States Geological Survey and the United States Irrigation Investigations. Other prominent features of the course are the drawing room practice, and supplementary reading in the College library.

The aim of the Mechanical Engineering Course is to afford the student such training as will qualify him to deal intelligently with engineering problems in general, and prepare him for a professional career. The instruction in all branches aims to blend the theoretical with the practical, so that the student may become familiar not only with the purely scientific phase of the work, but with its application to modern practice. As early as possible the student is brought into contact with practical problems, the graphical as well as the analytical method being used throughout their solution. Besides the practical tendency of the course, it has a high disciplinary value, and is especially adapted to develop originality of thought and action. The more strictly professional work may be classified as mathematics, physics, applied mechanics, drawing, and shopwork. Sufficient work in English, history, and other general subjects is given throughout the course to meet all ordinary demands.

THE ELECTRICAL ENGINEERING COURSE is outlined with a view to meeting the needs of young men who desire to practice electrical engineering in any of its various applications. In addition to the courses in English and modern languages that are given during the first three years, special emphasis is placed on the sciences of mathematics, physics, and chemistry, the principles of which underlie all electrical engineering practice. As a knowledge of mechanical engineering is essential to many electrical engineering operations, a large part of the student's time is devoted to training in this direction. The subjects included in this work are mechanical drawing, shopwork, machine design, applied mechanics, hydraulics, etc. The distinctive work in electrical engineering is given during the junior and senior years.

THE MINING ENGINEERING COURSE is planned to give the student a practical and scientific knowledge of mines and mining operations. Thorough training is given in the fundamental subjects of mathematics, physics, chemistry, geology, and mineralogy. Such work is given in mechanical, civil, and electrical engineering as require application in the more distinctive mining engineering courses. The class, laboratory, and field work at the College is supplemented by two eight week summer courses in the field. The first summer practicum follows the sophomore year, and is devoted to mine surveying. The students visit some mining district, and, under the direction of one of the professors, make careful surface and underground surveys of its properties. Following the junior year, the students spend eight weeks in the mining, milling, sampling, and smelting plants of the state, making a practical study of designing and operating mining and ore dressing plants; and of the different chemical and metallurgical problems involved.

The GENERAL SCIENCE COURSE corresponds to the usual baccalaureate course in science in higher institutions of learning. It is designed to furnish a liberal and thorough education, embracing the broad field of general science, mathematics, language, history, and literature. Scientific subjects characterize the work of the course. During the freshman year the students are thoroughly drilled in the subjects necessary to the more advanced special work of investigation. During the sophomore, junior, and senior years, students elect the subjects in which they have greatest interest; being allowed, under direction of the committee on General Science Work, to specialize in any of the subjects of chemistry, biology, mathematics, physics, etc.

The MANUAL TRAINING COURSE IN MECHANIC ARTS extends through four years, during the whole of which the students spend three hours daily in the workshop. While the general object is to give students taking the course a good elementary education, the special aim is to make tradesmen in three branches, carpentry, forging, and machine work. In the assignment of exercises in the shop and draughting room, the application of these exercises to practical construction or design is constantly kept in mind. In the shop, the method of instruction is to exhibit each new process before the class with such explanation as shall render each step plain. Then each student is supplied with material and scale drawing of the article to be made, and proceeds with his work under the constant supervision of the instructor. The principles of economy, neatness, and rigid accuracy are insisted upon in the construction of even the most trivial objects. Each student, whether specializing in wood or iron, is required to take at the beginning, one year in wood-work. In all cases, students are required to do at least one year's work with hand tools before beginning machine work.

In the ENGINEERING PREPARATORY COURSE students are thoroughly drilled in the subjects required for admission to the courses in Engineering and General Science.

The PREPARATORY COURSE is arranged to accommodate those young men and women who have been deprived of educational advantages until they have reached an age when they cannot advantageously attend the district schools.

The special aim is to prepare the students for admission to the more advanced courses of the College, and to provide such training as will be of most value to those who are unable to continue their educational work beyond this course.

AGRICULTURAL COURSE.

This course leads to the degree B. S. in Agriculture.

Freshman Year.	1st Term.		2nd Term.
Chemistry 1	5		5
Physics 1	3	Vet. Science 2	3
An. Industry 2	3	Agronomy 3	3
An. Industry 9, 6; or… Horticulture 1	3	Bus. Customs	3
History and Civics 3	3		3
	17		17

Sophomore Year.	1st Term.		2nd Term.
English 6	3		3
Mathematics 4	5		5
Animal Biology 2	3		3
Botany 2	5	Physics 1	3
		Meteorology	2
	16		16

Junior Year.	1st Term.		2nd Term.
English 7	3		3
German or French	3		3
Geology 1	3		3
Chemistry 3	3		3
An. Industry 3, 4; or An. Biology 10 and Agronomy 5	4	Vet. Sc. 3; or Agronomy 4, 5	4
	16		16

Senior Year.	1st Term.		2nd Term.
German or French	3		3
Economics	3		3
Mineralogy	2	Entomology	2
Thesis	1		1
Vet. Sc. 4 and An. Biology 8; or Engineering 3a, b and Agronomy 6; or Horticul. 2, 3, 4, 5	7	An. Industry 5 and *Elective; or Engineering 5d and †Elective; or Horticul. 2, 3, 4, 5,	7
	16		16

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*Animal Industry 7 or 10, Agronomy 4, or Engineering 5d.
†Animal Industry 5 or Horticulture 2b.

DOMESTIC SCIENCE COURSE.

This course leads to the degree B. S. in Domestic Science.

Freshmen Year.	1st Term.		2nd Term.
English 6	3		3
Drawing 3	2		2
Chemistry 1	5		5
H. S. 8, 9, 11	5		5
H. S. 5, 10, 12	2		2
	17		17

Sophomore Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 4	5		5
Physics 1	3		3
Botany 2	5	Horticulture 6	5
	16		16

Junior Year.	1st Term.		2nd Term.
English 7	3		3
German or French	3		3
Chemistry 2	4		4
An. Biology 8, 9	3		3
Elective	3		3
	16		16

Senior Year.	1st Term.		2nd Term.
H. S. 13, 14	5		5
Mineralogy	2	Entomology	2
Chemistry 4	2		2
Economics	3		3
Elective	4		4
	16		16

COMMERCIAL COURSE.

This course leads to the degree B. S. in Commerce.

Freshman Year.	1st Term.	2nd Term.
English 6	3	3
Mathematics 3	5	5
Civil Government	2	2
Commercial Law	3	3
Commercial Geography	2	2
Bookkeeping III or Stenography II	3	3
	18	18

Sophomore Year.	1st Term.	2nd Term.
Mathematics 4	5	5
Chemistry 1	5	5
Physics 1	3	3
History of Commerce	3	Const. and Int. Law... 3
	16	16

Junior Year.	1st Term.	2nd Term.
English 7	3	3
German, French, or Spanish	3	3
Sociology	3	3
Transportation	2	2
Elective	5	5
	16	16

Senior Year.	1st Term.	2nd Term.
German, French, or Spanish	3	3
Banking and Finance	2	2
Economics	3	3
Elective	8	8
	16	16

CIVIL ENGINEERING COURSE.

This course leads to the degree of B. S. in Civil Engineering.

Freshman Year.	1st Term.		2nd Term.
English 6	3		3
Mathematics 4	5		5
Chemisty 1	5		5
Physics 1	3		3
Engineering 1a	2		2
	18		18

Sophomore Year.	1st Term.		2nd Term.
German or French	3		3
Mathematies 5	5		5
Physics 2	3		3
Engineering 1b	2		2
Engineering 3a	3	Engineering 3b	3
	16		16

Junior Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 7	3	Engineering 12a	3
Engineering 5a, b	3		3
Engineering 9	4	Engineering 4a	4
Geology 2	2		2
Engineering 15	1		1
	16		16

Senior Year.	1st Term.		2nd Term.
Engineering 4b, c	5		5
Engineering 5c, e	3		3
Engineering 5f	3	Engineering 10	3
Engineering 5g	2		2
Economics	3		3
	16		16

MECHANICAL ENGINEERING COURSE.

This course leads to the degree B. S. in Mechanical Engineering.

Freshman Year.	1st Term.		2nd Term.
English 6	3		3
Mathematics 4	5		5
Physics 1	3		3
Chemistry 1	5		5
Engineering 1a	2		2
	18		18

Sophomore Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 5	5		5
Physics 2	3		3
Engineering 1b	2		2
Engineering 3a	3	Engineering 6a	3
	16		16

Junior Year.	1st Term.		2nd Term.
German or French	3		3
Mathematics 7	3	Engineering 12a	3
Engineering 2	4	Engineering 4a	4
Engineering 5a, b	3		3
Engineering 6b	2		2
Engineering 15	1		1
	16		16

Senior Year.	1st Term.		2nd Term.
Engineering 4b, c	5		5
Engineering 11	3		3
Engineering 7a	3		3
Engineering 8	2		2
Economics	3		3
	16		16

ELECTRICAL ENGINEERING COURSE.

This course leads to the degree B. S. in Electrical Engineering.

Freshman Year.	1st Term.	2nd Term.
English 6	3	3
Mathematics 4	5	5
Chemistry 1	5	5
Physics 1	3	3
Engineering 1a	2	2
	18	18

Sophomore Year.	1st Term.	2nd Term.
German or French	3	3
Mathematics 5	5	5
Engineering 1b	2	2
Physics 2	3	3
Engineering 3a, b	3	3
	16	16

Junior Year.	1st Term.	2nd Term.
German or French	3	3
Mathematics 7	3	Engineering 12a 3
Engineering 12b	4	4
Engineering 5a, b	3	3
Engineering 2	4	Engineering 4a 4
	17	17

Senior Year.	1st Term.	2nd Term.
Engineering 4b, c	5	5
Engineering 7a	3	3
Engineering 12c	5	5
Economics	3	3
	16	16

MINING ENGINEERING COURSE.

This course leads to the degree of B. S. in Mining Engineering.

Freshman Year.	1st Term.		2nd Term.
English 6	3		3
Mathematics 4	5		5
Chemistry 1	5		5
Physics 1	3		3
Engineering 1a	2		2
	18		18

Sophomore Year.	1st Term.		2nd Term.
Mathematics 5	5		5
Physics 2	3		3
Chemistry 5	3		3
Mineralogy	2	Chemistry 9	2
Engineering 3a	3	Engineering 3b	3
	16		16

Summer Practicum, Eight Weeks—Engineering 13c.

Junior Year.	1st Term.		2nd Term.
Chemistry 11	4		4
Geology	3		3
Engineering 5a	3	Engineering 12a	3
Engineering 2	4	Engineering 4a	4
Chemistry 10	2		2
	16		16

Summer Practicum, Eight Weeks—Engineering 13d.

Senior Year.	1st Term.		2nd Term.
Geology	2		2
Engineering 13a	5		5
Engineering 13b	4		4
Engineering 4b	5	Engineering 5h	5
	16		16

GENERAL SCIENCE COURSE.

This course leads to the degree B. S.

Freshman Year.	1st Term.	2nd Term.
English 6	3	3
Mathematics 4	5	5
Physics 1	3	3
Chemistry 1	5	5
	16	16

All the work of the sophomore, junior, and senior years is elective; but students are required to complete two years' work in modern languages, and to take an equivalent of five hours through one year in biology, five hours through one year in English, and one course in history and civics. To obtain a degree, the student must complete an equivalent of sixteen hours of class work weekly for four years.

AGRICULTURAL COURSE.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.		2nd Term.
English 3	4		4
English 4	2		2
Mathematics 2	5		5
Agronomy 1	4	An. Industry 1, 8	4
Drawing 1	2		2
Military Drill	1		1
	18		18

Second Year.	1st Term.		2nd Term.
English 5	5		5
Mathematics 3	5		5
Animal Biology 1	2		2
Agronomy 2	3	Botany 1	3
Carpentry 5	2	Forging 4b	2
Military Drill	1		1
	18		18

Third Year.	1st Term.		2nd Term.
Chemistry 1	5		5
Physics 1	3	Vet. Science 2	3
An. Industry 2	3	Agronomy 3	3
An. Ind. 9, 6, or Hort. 1	3	Bus. Customs	3
History and Civics 3	3		3
	17		17

DOMESTIC SCIENCE COURSE.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.	2nd Term.
English 3	4	4
English 4	2	2
Mathematics 2	5	5
History 1	3	3
Sewing 1, 2	3	3
Physical Culture	1	1
	18	18

Second Year.	1st Term.	2nd Term.
English 5	5	5
Mathematics 3	5	5
Animal Biology 1	2	2
History 2	3	Botany 1 3
H. S. 1, Sewing 3, 4	2	2
Physical Culture	1	2
	18	18

Third Year.	1st Term.	2nd Term.
English 6	3	3
Drawing 3	2	2
Chemistry 1	5	5
H. S. 8, 9, 11	5	5
H. S. 5, 10, 12	2	2
	17	17

COMMERCIAL COURSE.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.	2nd Term.
English 3	4	4
English 4	2	2
Mathematics 2	5	5
History 1	3	3
Bookkeeping 1	3	3
Military Drill or Physical Culture	1	1
	18	18

Second Year.	1st Term.	2nd Term.
English 5	5	5
Commercial Calculations	3	3
Animal Biology 1	2	2
History 2	3	3
Bookkeeping II or Stenography I *	3	3
Typewriting	2	2
Military Drill or Physical Culture	1	1
	19	19

Third Year.	1st Term.	2nd Term.
English 6	3	3
Mathematics 3	5	5
Civil Government	2	2
Commercial Law	3	3
Commercial Geography	2	2
Bookkeeping III or Stenography II	3	3
	18	18

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*Students who elect stenography or bookkeeping the second year must continue the same subject during the third year.

MANUAL TRAINING COURSE IN DOMESTIC ARTS.

Those who complete this course receive certificates of graduation.

First Year.	1st Term.	2nd Term.
English 1	5	5
English 2	5	5
Mathematics 1	5	5
Sewing 1, 2, 3	5	5
Phys. Culture	1	1
	21	21

Second Year.	1st Term.	2nd Term.
English 3	4	4
Drawing 1	2	2
H. S. 1, 2, 3	3	3
H. S. 6	5	5
Sewing 4, 5	3	3
Phys. Culture	1	1
	18	18

Third Year.	1st Term.	2nd Term.
English 4	2	2
Mathematics 2	5	5
History 1	3	3
H. S. 7	2	2
H. S. 4, 5	2	2
Sewing 6, 7	3	3
	17	17

MANUAL TRAINING COURSE IN MECHANIC ARTS.

Those who complete this course receive certificates of gratuation.

First Year.	1st Term.	2nd Term.
English 2	5	5
Mathematics 1	5	5
Penmanship	2	2
Geography	3	3
*(1)(2)(3)Carpentry 1	5	(1)(2)Carpentry 1 or (3) Machine work 1 } 5
	20	20

Second Year.	1st Term.	2nd Term.
English 1	5	5
Mathematics 2	5	5
Drawing 2	2	2
(1) Carpentry 2, or (2) Forging 1, or (3) Machine Work 2	5	5
Military Drill	1	1
	18	18

Third Year.	1st Term.	2nd Term.
English 3	4	4
Mathematics 3	5	5
Drawing 5	2	2
(1) Carpentry 3 or (2) Forging 2, or (3) Machine Work 3	5	5
Military Drill	1	1
	17	17

Fourth Year.	1st Term.	2nd Term.
Physics 1	3	3
History 1	3	3
Animal Biology 1	2	2
Drawing 6	3	3
(1) Carpentry 4, or (2) Forging 3, or (3) Machine Work 4	5	5
	16	16

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*The numbers preceeding the shop courses indicate the order in which students who intend completing the course are required to take the subjects; e. g., a student having elected (3) in the second term of the first year will be expected to continue with the subject marked (3) in each succeeding year. A student having taken carpentry during the first year, may elect (2) in the second year and continue with (2) through each succeeding year.

ENGINEERING PREPARATORY COURSE.

First Year.	1st Term.		2nd Term.
English 3	4		4
English 4	2		2
Mathematics 2	5		5
History 1	3		3
Drawing 1	2		2
Military Drill	1		1
	17		17

Second Year.	1st Term.		2nd Term.
English 5	5		5
Mathematics 3	5		5
Animal Biology 1	2		2
History 2	3		3
Carpentry 5	2	Forging 4a	2
Military Drill	1		1
	18		18

PREPARATORY COURSE.

	1st Term.	2nd Term.
English 1	5	5
Mathematics 1	5	5
Geography 1	3	3
English 2	5	5
Penmanship	2	2
Physical Culture Military Drill	1	1
	21	21

WINTER COURSES.

For the accommodation of persons who can attend school during the winter months only, the following special courses are provided, beginning January 5, 1903, and continuing ten weeks. The work is elective, the student being allowed, with the approval of the professor in charge, to select the studies desired.

Students who take any of the winter courses may elect such other regular college studies as they are prepared to pursue advantageously.

AGRICULTURE.

Agronomy	5
Stock Judging and Management	3
Stock Feeding	3
Dairying Lectures	2
Dairying Practice	4
Agricultural Bacteriology	2
Agricultural Chemistry	2
Horticulture	3
Entomology	2
Vet. Science	3
Farm Accounts	3
Irrigation	2
Poultry Keeping	2

DOMESTIC SCIENCE AND ART.

Cooking Lectures	5
Cooking Practice	2
Hygiene	5
Sewing	2
Dressmaking	2
Fancy Work	2

MECHANIC ARTS.

Carpentry 1	5
Carpentry 2	5
Forging 1	5
Forging 2	5

Departments of Instruction.

AGRONOMY.

PROFESSOR MERRILL.

1. ELEMENTARY AGRICULTURE. This course is intended to show the relation of the natural sciences to agriculture and explain how these facts may be applied in farm practice. Special attention is given to the problems in agriculture peculiar to the arid region. The work is designed to give young men who remain at the College but a short time an idea of the importance and value of agricultural pursuits. Required of all first year students in agriculture. Four hours a week during the first term.

2. RURAL ENGINEERING. The course of instruction included under this head embraces the subjects of irrigation, drainage, buildings and fences, and machinery. Required of all second year students in agriculture. Three hours a week during the first term.

(a) *Irrigation:* In this course the subject is studied with reference to its history, its different methods, the time of application of water, and the water requirements of different crops. Students have excellent opportunities to study the work in irrigation at the Experiment Station.

(b) *Farm Drainage:* A study is made of the practical effects of drainage, land needing drainage, and of the different problems involved in laying out and putting in a system of drains.

(c) *Buildings and Fences:* The arrangement, design, location, and cost of farm buildings is explained; fences and gates—their necessity, cost, kinds, and construction; wood for gates and fences—time to cut, conditions favorable to decay, and methods of preservation; discussion of fence laws.

(d) *Farm Machinery:* Attention is given to the tools and machinery of the farm—hoes, spades, plows, harrows, cultivators, rollers, planters, cutters, grinders, mowers, rakes, binders, wagons, etc.; their development, design, construction, draft, efficiency, durability, and care. The department has a large collection of lantern slides which are used in illustrating this subject.

3. SOILS AND FARM CROPS. This course is required of all third year students in agriculture. Three hours a week during the second term.

(a) *Soils:* The origin, composition, and physical and chemical properties of soils receive attention; different methods of treatment are examined, and the influence of these methods upon moisture, texture, fertility, and production; soil texture as affecting capillarity, osmosis, and diffusion, and as affected by cultivation and cropping. Special attention is given to the preservation of original soil fertility and the reclamation of alkali soils; and a general discussion of the proper use of different kinds of manure is presented. These lectures are supplemented by laboratory work, comprising the determination of the specific gravity of different soils, their water holding capacity, their adhesive and cohesive qualities, their capillary power, etc.

(b) *Farm Crops:* This is a study of the conditions of germination and growth and the circumstances modifying these conditions; the selection of crops for Utah; the system of rotation best adapted to the state, taking into consideration the distribution of labor, the production of manure, and the extermination of weeds; summer fallow; and the management of meadows and pastures. The laboratory and field work consists of a study of the vitality of seeds and their preservation.

The student makes observations, on the farm, on the habits of growth of the different farm crops.

4. Soil Physics. This work is intended for students wishing to specialize further along the lines of soil study, and must be preceded by Agronomy 3. It includes the determination of temperature, moisture, and soluble salt content of various soils under field conditions; the effect of subsoiling and various methods of tillage upon soil moisture and plant growth; the effect of different crops upon the soil and upon succeeding crops; the effect of special and general farming upon the productive capacity of soils. Required of all students in agriculture who elect Agronomy as a major. Three hours a week during the second term of the junior year.

5. Agricultural Experimentation. In this course students have access to the Experiment Station library, and make a study of the work of experiment stations and experimenters in this and other countries. The students are required to make abstracts of a sufficient number of bulletins, bearing on a selected line of work, to become familiar with their scope and aim. Required of all students in agriculture electing Agronomy as a major. One hour a week throughout the junior year.

6. Rural Economics. Required of all students in agriculture electing a major in Agronomy. Three hours a week during the first term of the senior year.

(a) *History of Agriculture:* The course covers the general development of the agriculture of those nations which have contributed most to agricultural progress. The development of Roman agriculture is specially emphasized influencing as it has the agricultural practices in other nations.

(b) *Farm Management.* This course includes a discussion of special and general systems of farming, of different systems of rotation, laying out and improving farms, economic bestowal of labor, and the profitable use of machinery.

ANIMAL INDUSTRY.

PROFESSOR LINFIELD.
ASSISTANT PROFESSOR DRYDEN.
MR. CROCKETT.

1. ANIMAL TYPES. The aim of this course is to study the qualities of the animal as indicated by the external form. The work also includes practice in keeping score cards. In judging animals, students are required to give reasons for their rating. Required of all first year students in agriculture. Four hours a week during the first fourteen weeks of the second term.

2. GENERAL COURSE. This course consists largely of lectures illustrated by charts, photographs, and lantern slides. It includes a brief study of the history and characteristics of those breeds of live-stock best adapted to Utah conditions; the laws of heredity; the feeding and management of different kinds of live-stock; the selection and judging of live-stock; compiling and study of pedigrees. Required of all third year students in agriculture. Three hours a week during the first term.

3. PRINCIPLES OF HEREDITY. This course includes a study of the laws of heredity, law of correlation, reversion, variation, fecundity, the methods of breeding, cross-breeding, in-and-in breeding, selection. These laws are practically illustrated by their application to the improvement of the live-stock on the farm. Practical work is given in the study of herd books, tabulation of pedigrees, and such other exercises as enable the students to learn the value of a pedigree, and how to keep the records of any breeding herd. The crops, live-stock, and poultry on the College farm are available for study and illustration. Elective to juniors in agriculture. Two hours a week during the first term.

4. BREEDS AND BREEDING. The object of this course is to show the zoological relation of our domestic animals to

the rest of the animal kingdom, emphasizing the principles illustrated in their development into specialized animals; and to study the different breeds of horses, cattle, sheep, and swine for the purpose of learning their qualities, characteristics, and adaptabilities. Elective to juniors in agriculture. Two hours a week during the first term.

5. STOCK FEEDING. This is a study of the principles underlying the profitable feeding of animals; the composition of plants, animals, and animal products. A study is made of the practices which give best results, as indicated by available data, gathered from the work of experiment stations in this and other countries. Special attention is devoted to the study of Utah conditions in the handling of live-stock. The hygiene, care, and management necessary to successful feeding are also studied. In connection with this course, the live-stock, farm buildings, and other equipment are available for practice and advanced study. Elective to seniors in agriculture. Four hours a week during the second term.

6. DAIRYING. Required of third year students in agriculture who do not take horticulture. Two hours a week during the first term.

(a) *Milk:* This course includes a thorough study of the methods used in testing, buying, and preserving milk for food or manufacturing purposes. The farm problem of milk production is studied in connection with the management of dairy cows.

(b) *Butter:* Factory and hand methods in butter production, creaming of milk by different methods, handling and ripening cream, churning, salting, working, packing, and marketing are studied. The work of the class room is illustrated and applied in the College dairy.

(c) *Cheese:* The process of Cheddar cheesemaking is emphasized. The principles and practice necessary to make a uniform product and to overcome characteristic difficulties are described and illustrated in the class room and dairy. The methods of manufacture of other kinds of cheese, particularly of such kinds as may be made at the home dairy, are also studied.

7. ADVANCED DAIRYING. This course consists of a study of special dairy problems, and of experimental work in handling dairy products. Elective to students who have completed Course 6, and Animal Biology 8. Three hours a week during the second term.

8. POULTRY MANAGEMENT. This course includes a study of breeds of poultry, poultry buildings, feeding and management, and the practical operation of incubators and brooders. Required of all first year students in agriculture. Three hours a week during the last four weeks of the second term.

9. BREEDS OF POULTRY. This course is a more extended study of breeds, breeding, and types, including a study of the American Standard of Perfection, and practice in judging; rations; the best methods of handling for specific purposes; natural and artificial incubation; poultry diseases; buildings and appliances; and the practices of successful poultry keepers. Required of all third year students in agriculture. One hour a week during the first term.

10. POULTRY EXPERIMENTS. In this course special work is offered to those who wish to specialize in this branch of animal industry. The time of the student is devoted largely to assisting in experimental work and recording his observations on the same. Elective to students taking a major in Animal Industry. Three hours a week during the second term of the senior year.

11. THESIS. In their thesis work, students are allowed to experiment with any of the live-stock on the College farm, with poultry, or in the dairy work. Required of students who elect Animal Industry as a major. One hour a week during the senior year.

HORTICULTURE.

1. PROPAGATION AND CARE OF PLANTS. During the first term's work *Principles of Plant Culture*, by Goff, and Green's Vegetable Gardening, are used as a guide in the study of the principles underlying an intelligent understanding of the care, growth, and development of orchard and garden plants and trees. Instruction is also given in propagation by seeding, budding, grafting, layering, and by cuttings, and in the management of hot-beds and forcing houses. The special requirements of the different vegetables both in garden and in the forcing house are discussed. Required of freshmen in agriculture. Four hours a week during the first term.

2. GENERAL HORTICULTURE AND ECONOMIC ENTOMOLOGY. The object of this course is to give the students as broad a grasp of these subjects from an economic standpoint as is possible in the time allotted to the work. Insect pests and plant diseases of the orchard and garden, together with remedies for each, are thoroughly discussed. Other phases of the work are, orchard management, cultivation, tree planting, pruning, location of orchards, and desirable varieties to be planted. During the second term the subjects of pomology and orchard management are taken up, including the choice of fruit lands, their cultivation, and the maintenance of fertility; the planting of orchards and other fruit plantations; choice of trees and selection of varieties; pruning; insect and fungus pests, and means of combating them. Required of seniors in agriculture who elect a major in Horticulture. Three hours a week throughout the year.

3. LANDSCAPE GARDENING AND FORESTRY. Following the history of gardening, the practical side of ornamenting private and public grounds is taken up. This includes the making of lawns, drives, and flower and shrubbery beds; sodding, tree planting, etc. The native trees of Utah, together with desirable trees for introduction, are studied under the head of

forestry. Required of seniors in agriculture who elect a major in Horticulture. Three hours a week during the first term.

4. FLORICULTURE. This course deals with the propagation and care of house plants, the planting and care of the flower garden, and home grounds. So far as possible, the work of the class room is supplemented by actual practice in the conservatory and on the College grounds. Taft's *Greenhouse Management.* Required of sophomore students in the Domestic Science Course. Three hours a week during the second term.

5. THESIS. As far as possible the thesis work must show result of original investigation by the student under the direction of the Horticulturist. Required of seniors in agriculture who elect a major in Horticulture. One hour a week throughout the year.

BOTANY.

1. STRUCTURAL AND SYSTEMATIC BOTANY. The aim of the work in structural and systematic botany is to help students to become familiar with the higher plants, the terms used in describing them, and their classification. Students are provided with microscopes and dissecting instruments for laboratory work, but must furnish their own collecting and mounting outfits. Fifty mounted and named plants are required. Gray's *Lesson's in Botany.* Required of second year students in the Agricultural and Domestic Science courses. Three hours a week during the second term.

2. PHYSIOLOGICAL BOTANY. Plant anatomy and the functions, growth, and nutrition of plant organs are studied. All laboratory equipment and materials are furnished. Bessey's *Essentials in Botany.* Required of sophomores in the Agricultural and Domestic Science courses; elective to others. Five hours a week during the first term.

ENTOMOLOGY.

1. General Entomology. In this course students are expected to acquire a general knowledge of the structure and classification of insects, especially the common insect pests. Insecticides and methods of applying them are given some-consideration. Smith's *Economic Entomology*. Required of seniors in the Agricultural and Domestic Science courses; elective in the General Science Course. Two hours a week during the second term.

VETERINARY SCIENCE.

Professor Merrill.

1. Veterinary Elements. This subject is taught by lectures and text books on the diseases of domestic animals, and is illustrated by observation and practice at the free clinics. Part of the term is given to the study of the diseases and conditions that require surgical treatment—such as lameness, wounds, abscesses, tumors, and the like. A few lectures are given in which the various methods and principles of shoeing are discussed, as well as the proper treatment of the horse's foot. Required of all third year students in agriculture. Three hours a week during the second term.

2. Veterinary Anatomy. This subject is taught in part by lectures, and is illustrated by charts, skeletons, etc. During this term there is a complete dissection of a horse. Required of students electing Animal Industry as a major, and elective to students in the General Science Course. Four hours a week during the second term of the junior year.

3. Veterinary Medicine. This subject includes therapeutics and materia medica. Students are instructed in the compounding and administering of medicines. The course

must be preceded by Veterinary Science 3. Finlay Dun's *Materia Medica* is used as a text book. Required of students who elect Animal Industry as a major. Four hours a week during the first term of the senior year.

4. The Free Clinic. Every Monday during the second term clinics are held to which diseased animals are brought for free treatment. Students are required to assist in the work and perform such operations as they are prepared for. Required of students taking any of the courses in Veterinary Science.

DOMESTIC SCIENCE.

Professor Cotey.
Mrs. Cook.
Miss Holmgren.
Miss Morrell.

The purpose of the following courses is to give instruction and practice in those subjects most intimately associated with the daily life of women at home.

I. HOUSEHOLD SCIENCE.

1. Laundering. The work consists of practice alternating with lectures. The practice includes plain white washing and removing stains, clear starching, best methods of doing up fine mull, of ironing shirts, cuffs, and collars, washing flannels, and cleaning silk and fine woolen goods. The lectures treat of the chemistry of the various materials used, and of hard waters and the process of softening them. Soaps, washing fluids, bleaching powders, bluings, and starch, are discussed in their scientific and practical relations to laundry work. Required of second year students in the Domestic Science Course, and in the Manual Training Course in Domestic Arts. Two hours a week during the first third of year.

2. COOKING I. The student receives instruction in selecting different cuts of meats and in the methods of cooking best adapted to them. Practice is given in roasting, braizing, broiling, in stews and pot roasts; in preparing fowls for cooking, and in making dressings; in boning, larding, and skewering, in making croquets, scallops, etc. Instruction is given in preparing soup stocks, in making cream soups, vegetable soups, and purees. Students are taught to prepare sauces suited to different kinds of meats and to make various meat pies, dumplings for stews, and noodles for soups. Required of second year students in the Manual Training Course in Domestic Arts. Two hours a week during the second third of year.

3. COOKING II. Instruction is given in the making of various kinds of yeast, salt rising, wet and dry yeast; white and graham bread, corn bread, Boston brown bread; many varieties of rolls and buns. This work includes lessons in making baking powder and in making a great variety of the breakfast breads in which it is used; biscuits, muffins, gems, Johnny cake, pancakes, and waffles. Part of the term is devoted to plain pastry cooking. Required of second year students in the Manual Training Course in Domestic Arts. Two hours a week during the last third of year.

4. COOKING III. Practice is given in making a variety of layer and loaf cakes, sponges, cream puffs, cookies, jumbles and fancy cakes, plain pastry, puff paste, tarts, patties, etc. The student is also given practice in a great variety of baked, boiled, and steamed puddings; custards, blancmanges, whips, creams, jellies, etc. Instruction is given in laying tables for dinner and lunch parties, and in waiting on tables. A few lessons are given in making taffy and sugar candies with French cream fondant. The work includes instruction in cooking vegetables and serving dinners during both winter terms. Required of third year students in the Manual Training Course in Domestic Arts. Two hours a week during the last two thirds of year.

5. FRUIT WORK. This includes canning by various methods, and making all kinds of preserves and marmalade; different methods of making jellies, and experiments with green and ripe fruits; the making of all kinds of ketchups, spiced fruits, sweet and sour pickles, table sauces and meat relishes; the preparing of fruit juices, cordials and syrups. The latter part of the term's work is a course of lectures on the chemical nature of fruit, its acids and sugars; the value of fruit as food, and its action on the human system; the causes of fruit fermentation, and a study of antiseptics. Young women doing this work are required to make use of reference books in the library, and to write essays upon the food value of fruit. Required of third year students in the Domestic Science Course, and in the Manual Training Course in Domestic Arts. Two hours a week during the first third of year.

6. FOODS. Foods are studied as to their sources, processes of manufacture, conditions in which they are found in the market, and methods of cooking best adapted to each. Talks are given on marketing and the selection of foods, and their care before cooking. Sanitary conditions of the kitchen and store rooms are discussed. General rules of measuring and mixing food materials and their proper proportions and combinations are taught, along with the best methods of baking and boiling; deep and shallow frying; carving and serving food. The principles taught in the class are put into practice by each student in the kitchen. Required of second year students in the Manual Training Course in Domestic Arts. Four hours a week throughout the year.

7. SANITATION AND HYGIENE. The lectures on these subjects treat of sanitary conditions about the home; dangers from damp and unclean cellars, foul drains and sinks; ventilation, heating and lighting; instructions especially necessary to women on the care of personal health; home nursing, with illustrative lessons on changing beds for the sick. Required of third year students in the Manual Training Course in Domestic Arts. Two hours a week throughout the year.

8. Home Nursing and First Aids to Injured. These subjects are taught by lectures and enforced by illustrations, with references to such authorities as Park, Wilson, Nightingale, Stoney, Hampton, Shaw, Canfield, and Stockholm. Required of third year students in the Domestic Science Course. Five hours a week during the first third of year.

9. Cooking IV. The purpose of this course is to give instruction in the best methods of selecting, preserving, and cooking all common food materials. All principles learned in the class room are demonstrated in the kitchen. William's *Chemistry of Cookery*, Richard's *Chemistry of Cooking*, and various bulletins issued by the United States Government are used as texts. Required of third year students in the Domestic Science Course. Five hours a week during second third of year.

10. Cooking V. This course includes all kinds of plain and some fancy cooking, and covers in a general way all the subjects with which a housekeeper in moderate circumstances needs to be familiar. Demonstration lessons are given at various times throughout the term, on subjects difficult of treatment in the general practice. A three-course lunch is served daily during the winter months. Members of the class take turns in presiding as hostess at the table, carving and serving plates and looking after the needs of the guests; they also take turns in waiting upon the table. The confidence and skill thus acquired are invaluable to them. Required of third year students in the Domestic Science Course. Two hours a week during the second third of year.

11. The Science of Nutrition. This is a study of foods, their chemical composition, characteristics, digestibility; the way in which they nourish the body; the effect of age, climate, and occupation on the amount and kind of food required. Books on food by such authors as Yeo, Smith, Sir Henry Thompson, Green, Atkinson, Youmans, Parks, and Hoy are used for reference. Constant use is made of government bulletins on the composition and digestibility of foods.

A full set of charts and bottles illustrating the composition of food are used as aids to the study. Required of third year students in the Domestic Science Course. Five hours a week during the last third of year.

12. DIETETICS AND INVALID COOKING. The course aims to determine the best foods to be given in diseases, with practice in their preparation and serving. The preparation of liquid diet, light diet and convalescent diet is taught the same as in hospital training schools. *Invalid Cooking*, by Mary Boland; *Food in Diseases*, by Yeo; *How to Feed the Sick*, by Dr. Gatchell, and other similar works, are used as texts. Required of third year students in the Domestic Science Course. Two hours a week during the last third of year.

13. SANITATION. The course embraces a study of the conditions necessary to a healthful home—fresh air, pure water, heating, lighting, and drainage. *Household Sanitation*, issued by the Collegiate Alumni Association, is used as a text book, together with the *Sanitarian*. Reports of various boards of health are used as reference books. Required of seniors in the Domestic Science Course; elective to others who have had course 12. Five hours a week during the first term.

14. HOUSEHOLD ECONOMICS. Lectures are given on the convenient arrangement and economical furnishing of rooms; the best methods of doing all kinds of housework, with a view to economy of time and strength; the duties of mistress and servants; the entertainment of guests; and many other subjects of interest to the home-maker. Books by prominent writers on these subjects, and a number of periodicals of especial value to students of the class, are found in the library. Required of seniors in the Domestic Science Course.

II. SEWING.

Besides the general advantages derived from industrial education, the object of this branch is to give a practical training in the sewing which every household requires. Neatness of work is insisted upon. The student provides material and makes her own garments.

1. Hand and Machine Models. (a) During the first term of the first year, in the Manual Training Course, the student makes a set of models, covering the full course in hand sewing, involving practice in basting, overcasting, back stitching, hemming, felling, gathering and stroking gathers, gusset, buttonholes, loops, eyelets, patching, darning, blanket stitch, slip stitch, chain stitch, French hem, French seam, etc. Instruction is given in the care and use of various machines. Regular practice is given in running, hemming, felling, gathering, puffing, tucking, quilting, etc. Talks are given on the position of the body and care of the eyes while sewing, on color, and on the nature and manufacture of materials used.

(b) During the second term, drawers, skirt, and underpatterns made according to the system used throughout the course, and to fit and finish a dress of washable material; also to cut, fit, and finish one shirtwaist. Required of first year students in the Manual Training Course in Domestic Arts. Two hours a week throughout the year.

2. (a) Dressmaking. This course includes draughting from measurements, patterns for waists, skirts, sleeves, etc.; practice in cutting and basting; also cutting, fitting, and finishing a worsted dress and fancy waist.

(b) Designing, Cutting, and Fitting. Instruction is given by talks on grace in design of costume, and harmony of color. Further practice is given in cutting and fitting. Required of second year students in Manual Training Course in Domestic Arts. Three hours a week throughout the year.

3. Advanced Dressmaking. Further work is done in practical costume making, cutting, basting, fitting, pressing, trimming, and finishing. Draughting from measurements, patterns for waists, skirts, sleeves, princess gowns, jackets, coats, etc., forms a large part of the work. Required of third

year students in the Manual Training Course in Domestic Arts. Three hours a week during the first term.

4. Fancy Work. This consists of hemstitching, drawn work, Kensington embroidery, Roman cut work, Spanish laid work, jeweled embroidery, Bulgarian embroidery, and modern lace making. Required of third year students in the Manual Training Course in Domestic Arts. Three hours a week during the second term.

5. Hand Stitches. During the first part of the first year, the student makes a set of models, covering the full course in hand sewing, and involving practice in basting, overhanding, overcasting, backstitching, hemming, felling, gathering and stroking gathers, gusset, buttonholes, loops, eyelets, patching, darning, blanket stitch, slip stitch, blind stitch, herring bone stitch, feather stitch, chain stitch, French hem, French seam, etc. Talks are given on the position of the body and care of the eyes while sewing, on color, and on the nature and manufacture of materials used. Required of first year students in the Domestic Science Course. Two hours a week during the first term.

6. Machine Work. The student is taught the use and care of various machines. Regular practice is given in running, hemming, felling, gathering, puffing, tucking, quilting, etc. Drawers, skirt, and underwaist are cut and made. Required of first year students in the Domestic Science Course. Two hours a week during the second term.

7. Machine Work. The students are taught to adapt and use patterns; to cut, fit, and finish a dress of washable material; and to cut, fit, hang, and finish one lined skirt of worsted material. Required of second year students in Domestic Science. Two hours a week during the first term.

8. Dressmaking. This course includes plain draughting from measurements, practice in cutting and basting, and cutting, fitting, and finishing one fancy waist. Required of second year students in Domestic Science. Two hours a week during the second term.

COMMERCE.

PROFESSOR BURCHELL.
ASSISTANT PROFESSOR ROBINSON.

1. BOOKKEEPING I. *Science of Accounts:* The course of instruction in the science of accounts embraces a careful study of the fundamental principles of bookkeeping. The principles of debit and credit are thoroughly developed by means of repeated drills and lectures. Journal and day-book entries are given careful attention. Much care and practice in penmanship, ruling, spacing, arrangement of work, etc., with special reference to figures, is exacted, thus giving students, in addition to principles on which the work is based, that manual training necessary for neat, accurate, and rapid bookkeeping. Required of first year students in the Commercial Course. Three hours a week throughout the year.

2. BOOKKEEPING II. (a) *Practical Bookkeeping* (6 mo.): In this work a regular laboratory method is used. Each student assumes the responsibility of a bookkeeper, and actually keeps books according to the shortest and most approved methods in various kinds of business—such as grocery, general merchandise, jobbing, commission, etc. College currency, bills of exchange, notes, checks, deeds, leases, mortgages, receipts, invoices and all other forms of commercial paper incident to the several kinds of business are used. All banking is done directly with the college bank. The work is largely individual, and so arranged that no two students will arrive at the same result. Every step in the progress of a student is carefully examined, and by a rigid system of checking, accuracy is exacted.

(b) *Business Practice* (3 mo.): Students form a business community, and each one not only keeps books but conducts and manages a business. All transactions are made either by correspondence or face to face with members of the class. Well furnished offices are run for the accommodation of the business circle. Optional with Stenography I to second year students in the Commercial Course. Three hours a week throughout the year.

3. BOOKKEEPING III. (a) *Corporation Bookkeeping* (3 mo.): The subject of corporation bookkeeping is fully developed. Every step in the organization of a corporation for the purpose of conducting a general manufacturing business is performed by the student, special care being given to the laws of Utah pertaining to corporations. After the corporation is fully organized, the books are kept by the latest and most approved *voucher system.* Bank bookkeeping is thoroughly developed in this course.

(b) *Expert Accounting.* The duties, qualifications and requirements of expert accountants, are studied. Books suitable for different kinds of business with the most approved ruling, special columns, etc., are discussed. Much practical work is given in opening and closing sets of books used in various business enterprises.

(c) *Office Work.* In this course students conduct the several offices—bank, wholesale, retail, etc., filling successively the various positions in each. The work is done in connection with the *business practice* of the second year students, and is as nearly actual business as can be reached in the schoolroom. The course is fascinating and requires skill, accuracy and rapid work. Optional with Stenography II to third year students in the Commercial Course. Three hours a week throughout the year.

4. BUSINESS CUSTOMS. The fundamental principles of account keeping are applied in this course by means of practical work in the use of different forms and blanks pertaining to actual business. Instruction and practice are given in simple bookkeeping as related to farm accounting, in the principles of banking, in the use of notes and checks, in ordinary commercial law, such as leases, contracts, and papers commonly used, with special reference to marketing farm products and buying farm supplies, including actual experience in

following market fluctuations, studying crop reports and results, from the standpoint of cause and effect. Required of third year students in the Agricultural Course. Three hours a week during the second term.

5. COMMERCIAL CALCULATIONS. This consists of a review and drill on the fundamental principles of arithmetic, weights and measures, percentage, profit and loss, commission, interest, discount, storage, equation of accounts, partnership settlements, and all problems that the average business man is called upon to solve. Short methods are studied, and practical devices presented. Required of second year students in the Commercial Course. Three hours a week throughout the year.

6. COMMERCIAL LAW. This embraces a study of the customs, law, nature, formation, operation, interpretation, and discharge of contracts; including agency, partnership, corporation, bills, notes and checks, purchase and sale of personal property, guarantee or suretyship, limitation of the time to sue; commission merchants and brokers, agreements for personal services, bailments, insurance, telegraphic communication, patents, copyright, trade marks, real estate conveyances, and the business and legal forms that are used to carry on trade. Required of third year students in the Commercial Course. Three hours a week throughout the year.

7. COMMERCIAL GEOGRAPHY. The subjects of mathematical, physical, and political geography are briefly reviewed with particular reference to their relation to climate, productions, transportation, commercial centers, etc. The student makes a careful study of the principal countries of the world from which such staple articles of commerce as food, textile and mineral substances, metals, and manufactured products are obtained. Internal and ocean communications with reference to seaport cities and markets are emphasized. There is no subject connected with commerce more interesting than commercial geography. It is a live subject, and any one who reads, sees, and thinks will not want for material to

assist in making the subject attractive and beneficial. Required of third year students in the Commercial Course. Two hours a week throughout the year.

8. HISTORY OF COMMERCE. The purposes of this course are to convey a general knowledge of the origin and early development of commerce; to trace its influence on the world's civilization; to show the effects of great discoveries, inventions, public works, legislative enactments, and other important influences by which the progress of commerce has been effected. A thorough research of the commercial history of our own country is required. Special stress is placed on the consular system and commercial relations of the United States. The student is led to a clear understanding of the beginning of commerce as the inevitable outcome of man's needs and desires. Required of sophomores in the Commercial Course. Three hours a week during the first term.

9. CONSTITUTIONAL AND INTERNATIONAL LAW. In this course, after a review of civil government, a study is made of the leading cases of constitutional law that have been passed upon by the Supreme Court of the United States. The great debates pertaining to the Constitution and the opinion of the constitutional lawyers are read and discussed. Students are led to investigate the relation that our government bears to other governments of the world. The rights and duties of nations as independent political communities, and a systematic outline of the existing rules of international conduct, by which the harmony of the national state-system of Christendom is maintained, are made a prominent feature of the course. Required of sophomores in the Commercial Course. Three hours a week during the second term.

10. TRANSPORTATION. This subject deals with those questions of railroad, canal, river, lake, and ocean transportation which have become matters of public concern. The history and management of railroads, canals, and steamship lines is given careful attention. The effect of improved methods of transportation upon internal and foreign commerce is con-

sidered. Government ownership combinations, competition, legislation, and the policies pursued by other nations are given careful attention. Required of juniors in the Commercial Course. Two hours a week during the year.

11. BANKING AND FINANCE. The theory of banking, ancient and modern, is first studied, after which a comparison is made of the system in use in the leading commercial nations. Crises and their causes are made a prominent feature of the course. Monetary units, coins, and coinage of different nations are discussed. A careful study of the legislation of the United States Congress pertaining to finance and banking is made. Required of seniors in the Commercial Course. Two hours a week during the year.

12. STENOGRAPHY I. This is an elementary course in the Gregg system of shorthand. The system is adapted perfectly to the hand, the shape of the characters being based upon movements common in ordinary handwriting. Other important features are, no position writing, no shading, and no detaching of vowels. These advantages enable the student to master the principles in a short time and to begin work from dictation early in the course. Business letters constitute the greater part of the dictation exercises. In addition to the regular class drill, individual instruction is given, enabling the student to work to the best possible advantage. *Gregg's Shorthand* and supplementary publications. Optional with Bookkeeping II to second year students in the Commercial Course. Three hours a week throughout the year.

13. STENOGRAPHY II. All the time allotted to this work is devoted to practice in writing and transcribing business letters, legal work, depositions, lectures, and general matter. The aim is to prepare students for positions as stenographers upon completion of the course. Optional with Bookkeeping III to third year students in the Commercial Course who have completed Course 12. Three hours a week throughout the year.

14. TYPEWRITING. The work includes instruction in the care and mechanism of the typewriter; exercises in fingering; practice in writing business letters, legal forms, specifications, tabulated statements, and general work; and manifold writing. Three different kinds of machines are used, all having the "universal" keyboard. Required of second year students in the Commercial Course. Two hours a week throughout the year. Two sections.

ENGINEERING.

PROFESSOR JENSON.
PROFESSOR SWENDSEN.
MR. PULLEY.
MR. BEERS.
MR. MCLAUGHLIN.
MR. HANSEN.

1a. MECHANICAL DRAWING I. This course is intended as a preparation for the work which follows in the courses in engineering. It consists of a thorough drill in the elementary principles of projection, including linear perspective and the more common conventions of engineering drawing. Required of freshmen in the engineering courses who have had Drawing I. Three hours a week throughout the year.

1b. DESCRIPTIVE GEOMETRY. The representation of problems, and the solution of problems relating to geometrical magnitudes in space, including orthographic projections and development; projections of plane and solid figures; curved surfaces and tangent planes; shades and shadows; construction of maps; solutions of problems relating to geometrical magnitudes. Required of sophomores in the engineering courses. Two hours a week throughout the year.

2. ELEMENTS OF MECHANISM. This includes a consideration of the various forms of motion and its production;

link motions, and their modifications as used in machinery; cam and wiper outlines; wheel trains and aggregate motions; design and construction of gear teeth; mechanism of special machinery. This subject deals with the purely geometrical relations of machinery, rather than with the form and design of articulating parts. Required of juniors in the Mechanical Engineering Course. Five hours a week during the first term.

3a. SURVEYING I. The general methods of plane and topographic surveying, and the use, care, and adjustments of instruments. The practical work in the field receives particular attention. Raymond's *Plane Surveying*. Required of sophomores in all engineering courses and seniors in agriculture who elect a major in agronomy. Three hours a week during the first term.

3b. SURVEYING II. This course deals especially with the advanced problems of city, railway, and hydrographic surveying. Raymond's *Plane Surveying* and Searles' or Trautwine's field book. Required of all sophomores in the Civil Engineering Course. Three hours a week during the second term.

3c. MINE SURVEYING. This course includes the theory and practice of determining a true meridian by means of direct solar and stellar observations; the location and patenting of mining claims and the laws relative thereto; a discussion of the general instructions issued to U. S. Deputy Mineral Surveyors. Each party of students undertakes a complete survey of a mining claim for patent, going through all field and office work required by the surveyor general for securing a patent. The theory and practice of underground surveying is fully discussed; the more difficult and unique problems and the different objects for which surveys are made being emphasized. Required of sophomores in Mining Engineering. Three hours a week during the second term.

4a. ANALYTICAL MECHANICS. In this subject are treated the general laws of statics and dynamics as illustrated in the composition and resolution of forces, determinations of centers of gravity, moments of inertia, dynamics of a particle and of rigid bodies. Required of juniors in the Mechanical Engineering Course. Four hours a week during the second term.

4b. Applied Mechanics. This course begins with a discussion of the materials of engineering and their use in engineering structures, derivation of formula for stress in members, and a careful comparison with the results of experimental research in the strength of materials. This is followed by a study of stresses and strains in framed structures, analytical and graphical methods being used in all cases. These are illustrated by complete analyses of roof and bridge trusses and modern high framed buildings. The subject is concluded with the discussions of the continuous girder, the elastic arch, and the general theory of elasticity. Required of seniors in the Engineering Courses. Five hours a week throughout the year.

4d. High Frame Buildings. This course will consist of a complete design of a modern high steel frame building, based upon the theory of stresses in framed structures and on modern practice. The instruction will consist of 12 or 15 lectures and an equivalent of 6 hours per week for one-half year in the draughting room. Students who have completed 4 b and 4 c are eligible.

5a. Hydraulics I. A thorough study of the general theories of hydraulics, the flow of water through pipes, weirs, orifices and open channels. Merriman's *Hydraulics*. Required of all juniors in Engineering. Three hours a week during the first term.

5b. Hydraulics II. A thorough study of methods and theories of the measurement of flow of water in conduits and canals, measurement of water power, dynamic pressure of flowing water, and an introduction to the general theories of water power. Merriman's *Hydraulics*. Required of juniors in the Civil, Mechanical, and Electrical Engineering Courses. Three hours a week during the second term.

5c. IRRIGATION I. The location, design, construction, and operation of irrigation canals; design and construction of dams, reservoirs, headgates, etc.; the duty of water, subdivision systems, and other subjects relating to irrigation systems. Wilson's *Manual of Irrigation.* Required of seniors in the Civil Engineering Course. Three hours a week during the first term.

5d. IRRIGATION II. This course deals especially with the problems in irrigation relating to the farm; the measurement and division of water, design of subdivision systems, methods of application of water. Required of seniors in the Agricultural Course who elect Agronomy as a major. Three hours a week during the second term.

5e. WATER POWER. A general treatment of the theories of hydraulic motors. The development of water power; design and construction of penstocks, pipe lines, power houses, etc. Frizell's *Water Power.* Required of seniors in the Civil Engineering Course. Three hours a week during the second term.

5f. WATER SUPPLY AND SEWERAGE A detailed study of the questions pertaining to public water supplies, reservoirs, filtration, distribution systems, classes of water pipes, and the design of water supply systems. The course also includes a study of the problems relating to drainage, construction and capacity of sewers, and sewerage disposal. Fanning's *Water Supply Engineering.* Required of seniors in the Civil Engineering Course. Three hours a week during the first term.

5g. HYDRAULIC LABORATORY. This course is intended to apply the theoretical work of courses of 5 a, b, c, e, and f, to practical problems in the measurement of water, establishment of lines and grades for canals, aqueducts, and pipes; rating of meters; making of estimates, etc. Required of seniors in the Civil Engineering Course. Two hours a week throughout the year.

5h. Hydraulics of Mining Plants. Pumping plants, water supply, compressors, heaters, and general subjects relating to mine hydraulics. Required of seniors in the Mining Engineering Course. Five hours a week during the second term.

6a. Pattern Making. This is an elementary course in making patterns of pipe fittings, groove pulleys, hangers, core boxes, etc. Required of sophomores in the Mechanical Engineering Course; open to others who have completed Course 5. Three hours a week during the second term.

6b Machine Work. This course consists of selected exercises from courses 2 and 3 in machine work, Mechanic Arts. Required of juniors in the Mechanical Engineering Course. Two hours a week throughout the year.

7a. Steam Engineering. This course begins with a consideration of the elements of a steam power plant, followed by a more detailed study of engines and boilers according to type and adaptability to different services. A careful study is made of thermodynamics, including refrigerating machinery. Standard methods of engine and boiler testing, and modern practice in design and construction are also considered. Required of seniors in the Mechanical Engineering Course. Three hours a week throughout the year.

7b. Heating and Ventilation. This course will consist of a complete design of a modern heating and ventilating plant according to one of the approved systems. The instruction will consist of three lectures a week for one-half of the year. An equivalent of not less than six hours a week one-half of the year in the draughting room will be required. Students who have completed 7 a are eligible.

8. Power. This course considers the sources of power, prime movers and their efficiencies, methods of distribution and transmission, with a careful study of losses due to friction, dissipation, etc.; power measurement, and power absorption, by various methods of working machinery; also a careful study of lubricants and their economy as such. In connection

with the class-room work, laboratory experiments are made on the performance and efficiency of mechanical apparatus of various kinds, and on the efficiency of fuels, gas analysis, etc. Tests of heating and power plants are made as opportunity is afforded. Required of seniors in the Mechanical Engineering Course. Two hours a week throughout the year.

9. ROADS AND PAVEMENTS. The location, construction, and maintenance of country roads; the pavement of city streets; materials used and methods of construction. Byrne's *Highway Construction.* Required of juniors in the Civil Engineering Course. Four hours a week during the first term.

10. MASONRY STRUCTURES. This course includes a treatment of the materials used in masonry structures; a discussion of the theories relating to retaining walls, dams, arches, and other masonry structures. Baker's *Masonry Structures.* Required of seniors in the Civil Engineering Course. Three hours a week during the second term.

11. MACHINE DESIGN. In this course are considered the effects of the moving parts of machinery, such as the reciprocating parts of the steam engine, flywheels, governors, etc.; and the general principles of design in machinery, carrying into effect the principles of the course in mechanism combined with those of the course in applied mechanics. The theory of design is supplemented throughout by the practical design of specific parts. Required of seniors in the Mechanical Engineering Course. Five hours a week throughout the year.

12a. DYNAMO MACHINERY. This course consists of lectures and assigned readings on the theory and practice of dynamo construction, special attention being given to forms and systems now in use. Shop methods will be illustrated as far as possible. Required of juniors in the Mechanical and Civil Engineering Courses. Three hours a week during the second term.

12b. DIRECT CURRENT DYNAMO ELECTRIC MACHINERY. A study of electrical measuring instruments, the theory, testing, and design of direct current generators and motors. Required of juniors in the Electrical Engineering Course. Four hours a week throughout the year.

12c. ALTERNATING CURRENTS AND ALTERNATING MACHINERY AND APPARATUS, AND TRANSMISSION OF ELECTRICAL ENERGY. The course follows Engineering 12b, and treats alternating electric currents in a way similar to that in which course 12b treats continuous currents. The latter part of this course is devoted to a study of the electrical transmission and distribution of power. Required of seniors in the Electrical Engineering Course. Five hours a week throughout the year.

13a. MINING AND MINE OPERATIONS. This course deals with the practical problems of mining and mine operations, and includes the classification and probable mode of the formation of ore deposits; the different operations of "sinking," "tunneling," etc.; drilling and breaking ground; blasting and explosives; different methods of exploration; supporting excavations by rock pillars, timber, masonry, and metallic supports; means of transportation, both underground and surface; hoisting and hoisting equipments; drainage, ventilation, illumination; safety appliances, both life and property. Required of seniors in the Mining Engineering Course. Five hours a week throughout the year.

13b. METALLURGY II. This course is a continuation of Metallurgy I of the junior year, described as Chemistry II, and deals almost entirely with the mechanical problems, or the methods and principles of graphical statics and mechanics, as applied, both architecturally and mechanically, to the design and construction of various mine, mill, and smelter plants. The different classes of machinery used in the mine and in the treatment of ore are discussed, including surface and underground mine machinery; smelters, mills, samplers; roasting, cyanide, and other plants. Standard specifications of different mining plants will be discussed and the economic considerations noted. Each student will make a design and complete working drawings of some mine or ore treatment plant. Required of seniors in the Mining Engineering Course. Four hours a week throughout the year.

13c. SUMMER WORK IN MINE SURVEYING. This course is the practical application of the course in Mine Surveying. The students visit some mining district for a period of eight weeks during the interval between the sophomore and junior years, under direct charge of one of the professors of Engineering. One of the typical mines of the district will be selected and a careful surface and underground survey made of its properties. The mapping and calculating of the work will be left for the winter term in drafting. Incidentally, the machinery, buildings, general mine equipment, and the geology and nature of the veins and ores will receive consideration. Mine inspecting and reporting will be one of the features of this course.

13d. SUMMER WORK IN METALLURGY. In this course, students spend eight weeks, during the summer following the junior year, in some of the mining, milling, sampling, and smelting plants of the state. They are given a thorough course in the practical work of operating and designing mining and ore dressing plants. A careful study is made of the different chemical and metallurgical problems involved in the several plants visited.

14. MACHINERY. This course will afford an opportunity to apply the general principles of machine design to a more detailed study of a particular type of machinery. The selection of the type to be studied will be left largely to the individual student. The following types are suggested: A more detailed study of steam machinery in general; locomotive construction; mining machinery; cotton and wool manufacturing machinery, etc. The work will consist of (a) prescribed reading, (b) study of catalogues and bulletins of manufacturers, (c) draughting board designs, (d) visits of inspection to such installations as are within reach. Regular hours will be assigned for consultation with the instructor, whose function

will be to aid in getting materials for study and to render such criticism and aid as will secure thorough and thoughtful work and reasonable progress. A definite scheme must be submitted and approved at the beginning of the year, and adhered to throughout the course. The course will be arranged according to the time at the disposal of the student, with ten hours a week throughout the year as a minimum. No student will be admitted to this course who has not completed all the technical work of the regular course in Mechanical Engineering.

MECHANIC ARTS.

PROFESSOR JENSON.
MR. HANSEN.
MR. WILLIAMS.
MR. PULLEY.

I. CARPENTRY.

MR. HANSEN.

1. (a) Rudimentary exercises in sawing, ripping, planing, mortising, dovetailing, and the application of these to simple articles of furniture, furnish the details of this course. Correct methods of using and handling tools are emphasized. Required of all first year students in the Manual Training Course in Mechanic Arts. Five* hours a week during the first term.

(b) Sharpening and adjusting carpenter's tools, and saw filing, followed by practice in making panels, doors, and sashes, and in sample cabinet work, constitute the work of this course. Open to first year students in the Manual Training Course in Mechanic Arts. Five hours a week during the second term.

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*In all the courses in Mechanic Arts, each hour's credit represents three hours work in the shops.

2. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (b). Five hours a week throughout the year.

(a) Plain cabinet making, concluding with a standard carpenter's tool chest. First term.

(b) Wood turning and other machine work in wood. Second term.

3. In this course the principles and practice gained in the foregoing courses are applied to frame house building. If possible, practice in building a regular house is given; but when such opportunity cannot be had, small scale building is done at the shops. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (b), and preferably Course 2 (a). Five hours a week throughout the year.

4. In this course the student is allowed to specialize in cabinet making, including carving and fitting and finishing, or in inside finishing of houses, or special work in stair building. In whichever branch he may specialize he is required to finish a complete design. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 3. Five hours a week throughout the year.

5. This course consists of selected exercises from Courses 1 (a) and 2 (b). Required of all second year students in the Engineering Preparatory Course and in the Agricultural Course. Two hours a week during the first term.

6. This is an elementary course in pattern making. Patterns of pipe fittings, groove pulleys, hangers, and core boxes are sample exercises of the course. Required of sophomores in the Mechanical Engineering Course; open to others who have completed Course 5. Three hours a week during the second term.

II. FORGING.

Mr. Williams.

1. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1 in Carpentry. Five hours a week throughout the year.

(a) This course consists of preliminary exercises, such as drawing, bending, twisting, and shaping, followed by exercises in iron welding and making iron tools. Accuracy in methods and results is insisted upon. First term.

(b) The work of this course consists of practice in steel and iron welds, steel and steel welds, and general work in steel tool forging and dressing. Chisels, punches, reamers, hammers, tin shears, nippers, etc., are sample exercises. Second term. Prerequisite, Course 1 (a).

2. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 1. Five hours a week throughout the year.

(a) This course consists of elementary work in horseshoeing and spring building, and in making and repairing different kinds of agricultural and other implements. First term.

(b) The work of this course consists of filing, chipping, hand fitting, and polishing, and general vise work; also practice in special forms of forging, such as wicket gates, cultivator teeth and irons, etc.

3. The work of this course consists of practical carriage building. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Five hours a week throughout the year.

4. (a) The work of this course consists of selected exercises from Course 1. Required of second year students in the Engineering Preparatory Course. Two hours a week throughout the second term.

(b) This course consists of selected exercises from

Course 1 (a), followed by work in horseshoeing and in repairing agricultural implements. Required of second year students in the Agricultural Course. Two hours a week during the second term.

III. MACHINE WORK.

Professor Jenson.
Mr. Pulley.

1. This course consists of selected exercises from Forging 1, the same as Forging 4 (a), followed by the vise work of Forging 2 (b). Open to first year students in the Manual Training Course in Mechanic Arts who have completed Course 1 (a) in Carpentry. Five hours a week during the second term.

2. Open to second year students in the Manual Training Course in Mechanic Arts who have completed Course 1. Five hours a week throughout the year.

(a) This course consists of preliminary exercises in straight and taper turning, drilling, planing, and milling, accompanied by instruction in the care and use of machinery. First term.

(b) The work of this course consists of boring and chucking in the lathe, thread cutting, polishing, etc., and such other exercises on other machines as will be required in making shaft couplings, tap wrenches, etc. Second term.

3. Open to third year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Five hours a week throughout the year.

(a) The work of this course consists chiefly of making taps, spiral drills, fluted reamers, and mandrils, with practice in finishing tempered articles on the universal grinding machine. First term.

(b) This course consists of the manufacture of parts of machinery, such as engine connecting rods. Second term.

4. The work of this course consists of practice in actual machine construction. Speed lathes and sensitive drills may be taken as sample exercises. Open to fourth year students in the Manual Training Course in Mechanic Arts who have completed Course 3 (b). Five hours a week throughout the year.

5. This course consists of selected exercises from Courses 2 and 3. Required of juniors in the Mechanical Engineering Course. Two hours a week throughout the year.

ANIMAL BIOLOGY.

PROFESSOR GOWANS.

1. ELEMENTARY ANATOMY AND PHYSIOLOGY. The purpose of this course is to familiarize the student with the important principles of the science of physiology, and furnish a basis for the study of hygiene. The student is encouraged to make a practical application of the laws upon which his health and proper physical development depend. Required of second year students in the Agricultural, Domestic Science, Commercial, and Engineering Preparatory Courses; and of fourth year students in the Manual Training Course in Mechanic Arts. Two sections. Two hours a week throughout the year.

2. GENERAL BIOLOGY. This work may be taken as a three-hour or a five-hour course. The lectures of the shorter course deal with some of the general principles of biology. The laboratory work consists of the detailed study of a number of representative vegetable and animal organisms. The longer course includes the above and an introduction to elementary histology and embryology. Required of those who elect a major in biology; of sophomores in the Agricultural Course; and as a prerequisite to Courses 3, 4, 5, and 6. Three hours (one lecture and two laboratory periods), or five hours (two lectures and three laboratory periods) a week throughout the year.

3. ZOOLOGY. The laboratory work consists of the dissection of a number of types, which are studied in considerable detail. The lectures and recitations are based upon the laboratory work and consider the important characteristics of the principal groups of animals, especially morphology and physiology, the principles of classification, and the general principles of zoology. Required of sophomores in the Agricultural Course; elective to others who have taken Course 1. Three hours a week throughout the year.

4. ADVANCED PHYSIOLOGY. The subjects discussed are, the phenomena of life; the physiology of the cell; chemical composition of the body; the physiology of nutrition; irritability and contractility; physiology of the circulation; physiology of the nervous system and sense organs. The laboratory work is an introduction to experimental physiology. Elective to those who have completed Course 2, and Chemistry 1. Three hours a week (lectures, conferences, and laboratory work) throughout the year.

5. HISTOLOGY. A minute study of the elementary tissues, excepting the nervous system. Some time in the beginning is devoted to the preparation of stains, hardening, fixing and other fluids, each student being required to prepare the reagents for his own use. A typical mammal is used for material. Prepared slides of human tissues are furnished the student. The course includes methods of fixing, decalcifying, staining, imbedding, sectioning, mounting, and drawing. Elective to those who have completed Course 2. Five hours a week during first term.

6. COMPARATIVE ANATOMY AND EMBRYOLOGY OF THE VERTEBRATES. This course is based upon Wiedersheim's *Comparative Anatomy of Vertebrates*, and Foster and Balfour's *Embryology*. The course aims to consider more thoroughly than is possible in Course 3 the subject of vertebrate zoology. Elective to those who have taken Courses 2 and 3. The extent of this course will be arranged to suit the convenience of students.

7. NEUROLOGY. The course includes general histological technique, as in Course 5, and some special neurological methods not included in that course. (a) A study of the comparative structure of the brain and nervous system of the higher and lower animals; (b) histology of the nervous system and sense organs. Elective to those who have completed Courses 2 and 5. Five hours a week during the second term.

8. BACTERIOLOGY. This course consists of a study of elementary technique; the non-pathogenic bacteria; the work on yeasts and moulds; and the examination of air, water, and soil. Required of juniors in the Domestic Science Course, of students in the Agricultural Course who elect a major in Animal Industry, and of students in the General Science Course who elect a major in Biology; elective to others. Three hours a week during the first term.

9. PATHOGENIC BACTERIA. Required of juniors in the Domestic Science Course and of students in the General Science Course who elect a major in Biology; elective to others who have completed Course 8. Three hours a week during the second term.

10. SOIL BACTERIA. After considering the elementary technique, this course deals with the examination of soils. The nitrifying organisms and the relationship of bacteria to soil fertility are discussed. Required of seniors in the Agricultural Course who elect a major in Agronomy; elective to others. Three hours a week during the first term.

CHEMISTRY.

PROFESSOR WIDTSOE.
ASSOCIATE PROFESSOR YODER.
MR. MCLAUGHLIN.

1. GENERAL CHEMISTRY. Required of sophomores in the Commercial Course and of freshmen in all other courses. Five hours a week throughout the year.

(a) *Elementary Chemistry:* This course deals with the important facts and fundamental theories of chemistry, and with the applications of chemistry in the arts and manufactures. The laws of chemical combination; the writing of reactions, and the solving of stoichiometrical problems are given special, careful consideration. Students taking this course must also take Courses 1 (b) and 1 (c).

(b) *Elementary Practical Chemistry:* This course supplements Chemistry 1 (a) and furnishes the necessary practical preparation for qualitative analysis. The non-metallic elements, mainly, are studied with reference to their combinations with each other; their reactions are verified, and the facts and theories of the lecture room are tested by experiments.

(c) *Qualitative Analysis:* This course runs parallel with and supplements the descriptive study of the metals and their compounds. Under the direction of the instructor the students apply with their own hands the reagents necessary to determine the composition and properties of chemical compounds. They thus gain a practical knowledge of the methods of chemical analysis and manipulation. Each student is required to analyze and report on a number of unknown substances. This work is deemed extremely important from an educational as well as from a practical point of view.

2. ORGANIC CHEMISTRY. This course consists of a brief survey of the more important reactions and compounds of the fatty and aromatic series of hydrocarbons and their derivatives, together with a full discussion of the nature and influence of molecular structure. Opportunity is given the student to prepare a number of organic compounds which illustrate in their preparation the methods of work of the organic laboratory. Required of juniors in the Domestic Science Course. Four hours a week throughout the year. Prerequisite: Chemistry 1.

3. AGRICULTURAL CHEMISTRY. This course consists of lectures and assigned readings on the chemical problems of

agriculture. The aim is to make the student familiar with our present knowledge of the composition of the plant; the sources of plant food; the composition of the animal; the principles of animal nutrition; and the chemical nature of soils, waters, dairy products, etc. In the laboratory are taught the methods of agricultural analysis. Required of juniors in the Agricultural Course. Three hours a week throughout the year. Prerequisite: Chemistry 1.

4. CHEMISTRY OF FOODS AND COOKERY. In this course, foods and methods of cooking are studied experimentally, with especial reference to human nutrition. The common foods, both animal and vegetable, are separated by physical and chemical means, into their constituents, after which the effects of different methods of cooking upon the various constituents are investigated. Wine, beer, tea, coffee, milk, and other drinks are also examined, and separated into their constituent parts. Spices and condiments are studied with the especial purpose of learning simple methods for the detection of the common adulterants. Some attention is also given to the effect of different kinds of heating apparatus upon the chemical changes that take place during cooking. Required of seniors in the Domestic Science Course; elective to others. Two hours a week throughout the year.

5. QUANTITATIVE ANALYSIS. This is mainly a laboratory course, giving the student practice in the typical methods of proximate and ultimate quantitative chemical analysis. It aims also to give, in familiar talks, a due appreciation of the importance of accuracy in chemical work, and of the relation of quantitative analysis to theoretical chemistry. After the necessary introductory practice, samples of waters, soils, ores, agricultural products, and foods are analyzed and reported upon. The work of the Experiment Station chemical laboratory furnishes a good opportunity for the study of methods of analysis. Elective to those who have completed Course 1.

6. ANALYSIS OF FOODS AND FEEDING STUFFS. In this course, various articles of food or farm products, used for

food, are analyzed to determine quantitatively the different constituents, as proteids, carbohydrates, fats, crude fibre, etc. In this work the Methods of Analysis adopted by the Association of Official Agricultural Chemists are in the main followed. Besides this work, numerous exercises in the detection of adulterants are carried out. Prerequisites: Course 1, and preferably Courses 2 and 5. In connection with the work going on in the Experiment Station laboratory, there is excellent opportunity for students to pursue this course. This course is especially valuable to students of Domestic Science or of Agriculture, by giving them a scientific basis for judging the dietetic value of any food, or of determining a rational ration for man or beast. A direct aim of this course, also, is to fit the student for positions as analysts in agricultural experiment station chemical laboratories, or food inspection laboratories. Credit is given according to the work done.

7. TOXICOLOGY. This is a laboratory course including a study of some of the more common poisons, and their detection and separation from articles of food, contents of stomach, etc. Some attention is also given to the symptoms of poisoning, antidotes, and post-mortem examinations. The course is intended especially for students who expect to follow the profession of medicine, or who are preparing to work in laboratories as public analysts. Prerequisites: Chemistry 1 and 2, and preferably Chemistry 5. Three hours a week during the second term.

8. RESEARCH WORK. The laboratories of the College and the Experiment Station are open to students, with the necessary preparation, who desire to pursue special independent studies in the domain of chemistry. The researches carried on by the chemical department of the Experiment Station are of great aid to students who are engaged in the solution of scientific problems. Elective to those who have completed Courses 2 and 5.

9. ASSAYING. The fire and wet methods of assaying continue and supplement the work of Course 5 in quantitative

analysis. This course includes (a) a study of the principles of fluxing and their application to typical silicious, barytic, and pyritic ores; (b) the assaying of rich, medium, and low grade silver, gold and lead ores by means of the "nitre," "nail," and "roasting" methods, and the comparison of results; the assaying of copper mattes and bullion by the combined dry and wet methods; and an explanation of mine, mill, and smelter assays. The wet methods of assaying are the ordinary methods of volumetric analysis so modified as to be applicable to the several purposes of the "assay requirements," and will include the rapid determination and estimation of silver, lead, copper, iron, silica, sulphur, zinc, lime, manganese, cobalt, nickel, etc. Large numbers of "smelter checked" samples are given as exercises to the students to assay. The practice in "fire" and "wet" assaying, as given by this course, aims to make of the student a practical and capable assayer. Prerequisites: Chemistry 1, and preferably Chemistry 5.

10. METALLURGY I. This subject begins in the junior year and is continued in the senior year as Engineering 13 b. During the junior year, the time is devoted as far as practicable to the chemical side of the metallurgy, the mechanical equipment being discussed only as far as is necessary for a full understanding of the chemistry of the metallurgical problems involved. Some of the subjects to be dealt with in this course are the general principles of metallurgy, including first a thorough study of the general properties of the metals, followed by a consideration of the thermo and other treatments of metals and alloys, the properties, occurrence, and use of refractory materials and fluxing materials; the study of furnace slags; calculation of furnace charges; smelting and refining of coppers; and the metallurgy of gold, silver, lead, iron, zinc, aluminum, mercury, platinum, cobalt, and nickel. To students especially interested in the oil industry, some time will be devoted to a study of the chemical problems involved. The chemical problems of roasting, cyaniding, amalgamating, and other metallurgical processes form the basis for laboratory

tests to be made by the students. Four hours a week throughout the year.

11. PHOTOGRAPHY. A course in practical photography will be offered, consisting principally of practical work by the students, introduced and supplemented by lectures and demonstrations by the instructor. The students will be given the use of a camera, and will expose plates or films under various conditions as to light and subject in and out doors, develop plates and films, study effect of over and underexposure and over and underdevelopment, print pictures on the several classes of paper, as "blue-print" paper, "printing-out" paper, and "development" paper, tone with gold and with platinum, make transparencies and lantern slides, and enlarge or reduce pictures. Fees will be charged to cover cost of material consumed. One hour a week during the second term. Open to students having had one term's work in Chemistry. Students desiring it will be given opportunity for more advanced experimentation along the several phases of photography.

NOTE:—In courses 5, 6, 7 and 8, a reading knowledge of German is highly desirable.

GEOLOGY AND MINERALOGY.

MR. PETERSON.

1. GENERAL GEOLOGY. The instruction given is intended to familiarize the student with the physiographic changes now in progress and the agencies which produce them, with the origin and structure of the various materials composing the earth's crust, and with the chronological succession of the great formations. A careful study of the development of the North American continent from the earliest time will comprise most of the second term's work. Several field trips will be made and enough field practice given to introduce the methods by which the geological phenomena of a given area may be interpreted. Required of juniors in the

Agricultural and Mining Engineering Courses; elective to others. Three hours a week throughout the year.

2. STRUCTURAL GEOLOGY. The work in this course will begin with a classification of the common rocks, and a careful study of their characteristics, source and economic value. Work will then be taken up along the lines of structural and topographical geology, with stress laid upon the problems of stratification, cleavage, faulting, disintegration, etc., as it may affect the work of the engineer. Each principle is supplemented by field and laboratory work. Required of juniors in the Civil Engineering Course. Two hours a week throughout the year.

3. ECONOMIC GEOLOGY. The object of this course is to give the student some idea of the mineral resources of the United States. The work will include a careful study of the vein-forming minerals, origin of ore deposits, mining terms and methods, the source production and economic value of iron, gold, platinum, silver, copper, lead, zinc, mercury, tin, aluminum, etc.; also the sources, with outlines of the processes of preparation, and economic value of coal, petroleum, natural gas, asphaltum, building stones, cements, soils, clays, mineral fertilizers, mineral water, fullers earth, lithographic stone, precious stone, etc. Much of the information will be taken from the Reports of the United States Geological Survey. Required of seniors in the Mining Engineering Course. Elective to others who have completed Courses 1 and 4 and Chemistry 1. Two hours a week throughout the year.

4. MINERALOGY. This course is a systematic study of the common minerals as outlined in Dana's Manual. The student will be required to make a collection of the minerals close to the College. Blow pipe analysis and determinative mineralogy constitute the laboratory work. Required of seniors in the Agricultural and Domestic Science Courses, and of sophomores in the Mining Engineering Course. Two hours a week during the first term.

METEOROLOGY.

Assistant Professor Dryden.

1. Meteorology. This course includes an elementary study of air pressure, humidity, temperature, rainfall, evaporation, wind velocity, theory of storms, methods of forecasting, and a general study of the United States Weather Service, with special reference to the relation of climate to health and to agriculture. The reading of the weather instruments in use at the College is made a part of the work. Required of sophomores in the Agricultural and Domestic Science Courses. Two hours a week during the second term.

[The College receives the telegraphic *weather forecasts* from the forecast official of the Department of Agriculture located at San Francisco. The forecasts are telegraphed each day (Sundays and holidays excepted) at government expense. These forecasts or warnings are of great value to the farming community. In 1893 the percentage of verifications of the forecasts of the Pacific coast division was 83.7. For Utah, which is part of this division, the percentage was likewise 83.7. Great value is placed upon these forecasts by the Department of Agriculture at Washington. From their timely warnings much property is saved both on sea and land. The department considers that $10,000,000 is a conservative estimate of the value of property saved in 1895. Doubtless some means will be devised in the near future whereby these forecasts will be made more accessible to the farming community. An explanation of the flag signals is shown on the third page of the cover.]

PHYSICS.

Mr. Campbell.

1. Elementary Physics. The object of this course is to enable every student to obtain a practical acquaintance with laboratory methods of work, and with the elementary facts and laws which are the foundation of the science and physics.

The lectures are illustrated by experiments performed by the instructor, and numerous problems are worked in and out of class. The laboratory work consists of about forty-five experiments, chiefly quantitative, performed by each student. Hall and Bergen's *Text Book of Physics.* Required of sophomores in the Domestic Science Course, and of freshmen in all other courses. Three hours a week throughout the year.

2. GENERAL PHYSICS. This is a more advanced course than Physics 1. Stress is laid on the subjects of mechanics, heat, and electricity. Hastings and Beach's *General Physics* Required of sophomores in the Civil Engineering and Mechanical Engineering Courses; elective to others. Three hours a week throughout the year.

3. ELECTRICAL AND MAGNETIC MEASUREMENTS. This course is intended mainly for the students in the Electrical Engineering Course, but may be taken by others who have the necessary preparation. Most of the work will be in the laboratory, lectures being given from time to time as required. The laboratory work consists of accurate measurements of current strength, resistance, electromotive force, mutual induction, and the determination of the magnetic properties of a specimen of iron. Two hours a week during the second term.

4. THERMOMETRY AND PHYSICAL OPTICS. This course is arranged for those students in the General Science Course who elect Physics as a major. Elective to students who have completed Course 3 and Mathematics 5. Four hours a week throughout the year.

MATHEMATICS AND ASTRONOMY.

PROFESSOR LANGTON.
MR. PETERSON.
MR. OSTIEN.
MR. MCLAUGHLIN.

The elective courses in mathematics are not all given each year, but vary from year to year to suit the convenience of students who desire to specialize in mathematical science. Any elective course not applied for at the beginning of the year by at least three students properly prepared may not be given. If applied for by the requisite number of students, additional courses in quaternions, determinants, theory of equations, projective geometry will be given.

1. ARITHMETIC. This course consists of a thorough treatment of elementary arithmetic. Required of all students in the Preparatory Course, and of first year students in the Manual Training Courses in Mechanic Arts and Domestic Arts. Four sections. Five hours a week throughout the year.

2. ARITHMETIC AND ALGEBRA. Required of second year students in the Manual Training Course in Mechanic Arts, third year students in the Manual Training Course in Domestic Arts, and first year students in all other courses. Five sections. Five hours a week throughout the year.

(a) *Advanced Arithmetic:* Special attention is given to the nature, origin, and development of number. The class recitation hour is devoted to thorough consideration of the fundamental processes of arithmetic, including contracted methods of multiplication and division, common and decimal fractions, factors and multiples, mensuration, the metric system of weights and measures, square and cube root, proportion, percentage and interest, and practical problems. First term.

(b) *Algebra:* This course includes a thorough treatment of the fundamental operations, use of parentheses, factoring, highest common factor, lowest common multiple, fractions, and simple equations. Second term.

3. ALGEARA, GEOMETRY. Required of third year students in the Commercial Course and the Manual Training Course in Mechanic Arts, and of second year students in all other courses, except the Manual Training Course in Domestic Arts. Two sections. Five hours per week throughout the year.

(a) *Higher Algebra:* After a brief review of the subjects treated in Course 2 (b), the following subjects are considered: Simple equations, inequalities, involution and evolution, theory of exponents, radicals, quadradic equations, ratio and proportion, progressions, and binomial theorem. Fisher and Schwatt's *Higher Algebra.* First term.

(b) *Plane Geometry:* This course includes the general properties of regular polygons, their construction, perimeters, and areas; regular polygons and circles, with problems for construction; maxima and minima; and methods for determining the ratio of the circumference to the diameter. Wells's *Plane Geometry.* Second term

4. GEOMETRY, ALGEBRA, TRIGONOMETRY. Required of sophomores in the Agricultural, Domestic Science, and Commercial Courses; of freshmen in all other courses. Five hours a week throughout the year.

(a) *Solid Geometry:* Phillips and Fisher's *Geometry.* First third of year.

(b) *Advanced Algebra:* This course is a continuation of Course 3 (a), and includes a thorough drill in the most important principles of higher algebra required in the engineering and other courses. Second third of year.

(c) *Trigonometry:* The deduction of general trigonometric formulae, the solution of plane and spherical triangles, and practice in the use of logarithmic tables. Lyman and Goddard's *Trigonometry.* Last third of year.

5. ANALYTIC GEOMETRY, CALCULUS. Required of sophomores in the engineering courses; elective to others who have

completed Course 4. Five hours a week throughout the year.

(a) *Analytic Geometry:* The analytic geometry of the straight line, the circle, and the conic sections, including a discussion of the general equations of the second degree, and some special examples in transcendental and higher plane curves.

(b) *Differential Calculus:* The development of the fundamental principles and formulae of the differential calculus; applications to various problems in plane geometry and analysis, such as indeterminate forms, maxima and minima, curvature, expansions of functions in series, evolutes and involutes, and curve tracing.

(c) *Integral Calculus:* Integration of various forms; development of the formulae of the integral calculus; application in rectification of curves, quadrature of plane and curved surfaces, cubature of volumes, etc.

6. DIFFERENTIAL EQUATIONS. This course is arranged to meet the special requirements of engineering students, and includes a treatment of the theory and methods of the solution of total differential equations, with a short introduction to partial differential equations. Required of juniors in the engineering courses. Three hours a week during the first term.

7. MODERN GEOMETRY. This course treats the most important theorems and examples connected with harmonics, anharmonics, involution, projection (including homology) and reciprocation, including the following: Harmonic ranges and pencils; conics and focal projections; anharmonic ratios; homographic ranges; anharmonic properties of points on a conic, of tangents of a conic; poles and polars, reciprocation; properties of triangles; Pascal's and Brianchon's theorems; homographic ranges on a conic; ranges and pencils in involution; involution of conjugate points and lines; involution range on the conic, of a quadrangle, of a quadrilateral; constructions of the first and second degree; the principle of continuity; circular points and lines; real and imaginary projection, generalization by projection, and homology. Cremona's

Projective Geometry, Russell's *Treatise on Pure Geometry*, and Lachlan's *Modern Pure Geometry*. Elective to those who have completed Course 5. Five hours a week throughout the year.

8. Plane and Solid Analytical Geometry, Advanced Course. This course includes the equations and properties of the point, right line, and plane, of the sphere, cylinder and cone, and of the paraboloids, ellipsoids, and hyperboloids; the modern algebraical methods of the conic sections; a short discussion of the general theory of higher plane curves and surfaces; applications of the differential and integral calculus to problems involving functions of two or more variables, such as development in series and transformation of functions, curvatures, areas of surfaces, volumes of solids, etc. The work of this course will consist in the discussion of portions of Salmon's *Conic Sections*, *Higher Plane Curves*, and *Analytic Geometry of Three Dimensions*. Elective to students who have completed Course 5. Five hours a week throughout the year.

Curves, and Analytic Geometry of Three Dimensions. Elect-

9. Differential and Integral Calculus, Advanced Course. This course embraces the elements of the theory of functions of imaginary variables; the various methods of integration, systematically treated; the elements of the theory of the elliptic functions; the mechanical and geometrical applications of the calculus treated more fully than in Course 5; and some of the more important cases of Differential Equations. Todhunter's *Differential Calculus* and Williamson's *Integral Calculus*. Elective to students who have completed Course 9. Five hours a week throughout the year.

10. History and Philosophy of Mathematics. This course deals with the origin, development, and logical relation of the various subjects of mathematical science, including a series of synoptic lectures, which may be roughly outlined as follows: Mathematics among the ancients; Descartes and the discovery of analytic geometry; Newton, Leibnitz, and the

calculus; Hamilton and the invention of quaternions; modern geometry; mathematics and mathematicians of the United States. Ball's *History of Mathematics*. Comte's and Bledsoe's *Philosophy of Mathematics*, the *Encyclopædia Britannica*, and other works of reference. Elective to students who have completed Course 9. One hour a week throughout the year.

11. GENERAL ASTRONOMY. This course deals with the general facts and principles underlying the science of astronomy, with solutions of many problems, particularly those relating to the determination of latitude, longitude, and time. Instruction is given by means of recitations and lectures. Young's *General Astronomy*. Elective to students who have completed Course 4. Two hours a week throughout the year.

12. PRACTICAL ASTRONOMY. A continuation and completion of Course 11. Theory and use of instruments—sextant, transit instrument, zenith telescope, and equatorial; various methods of determining longitude and latitude; graphical methods of predicting eclipses, etc. Doolittle's *Practical Astronomy;* Clarke's *Geodesy*. Elective to those who have completed Courses 5 and 11. Two hours a week throughout the year.

ENGLISH LANGUAGE AND LITERATURE.

PROFESSOR UPHAM.
MR. CAINE.
MR. HILL.
MISS MOENCH.
MISS BAKER.

1. GRAMMAR AND COMPOSITION I. This work includes:— Orthography; the parts of speech; the construction, analysis, and punctuation of easy sentences; the correction of common errors in language; and the writing of brief compositions. The written work is in part suggested by the

text book, and in part correlated with the lessons in reading and in geography. Hyde's *Lessons in English, Second Book* for sections 1 and 2; Hyde's *Two Book Course*, Book II, for sections 3 and 4. Required of all Preparatory students. Four sections. Five hours a week throughout the year.

2. READING AND SPELLING. The following books are read: *The Lady of the Lake, The Sketch Book, The Vicar of Wakefield*, Pope's Homer's *Iliad, I, VI, XXII, XXIV, The De Coverly Papers, The Merchant of Venice.* The purpose of the work is the acquisition of a vocabulary, of a knowledge of the contents of the books, and of a correct oral expression. Written summaries and reproductions are required, and due attention is given to spelling. *Student's Series of English Classics; Handy Edition.* Required of all Preparatory students. Four sections. Five hours a week throughout the year.

3. GRAMMAR AND COMPOSITION II. The study of Grammar is completed in this course. There is some work in etymology, but attention is given chiefly to the principles of syntax, and to the construction and analysis of sentences. Later in the year an elementary text-book on Rhetoric is introduced, and the student is drilled in the correct use of words and sentences. Material for composition work is drawn from the text-books, and from the lessons in English Classics and U. S. History. Required of all first-year students. Four hours' credit. Four sections. Five recitations a week throughout the year.

4. READING OF ENGLISH CLASSICS. The books read are selected from those prescribed for study and practice in the uniform college entrance requirements: Macaulay—*Essay on Milton, Essay on Addison;* Milton—*Minor Poems, Paradise Lost, I-III;* Shakespeare—*Macbeth;* Burke—*Speech on Conciliation with America;* George Eliot—*Silas Marner;* Tennyson—*The Princess;* Coleridge—*Ancient Mariner;* Lowell—*Vision of Sir Launfal;* Scott—*Ivanhoe.* This course aims at a thorough understanding of the material, and en-

courages the student in giving his own expression of the thoughts there found. The elementary qualities of style are explained and illustrated. Frequent written exercises are required, and memory passages are assigned. *College Entrance Requirements.* Required of all first year students. Four sections. Two hours a week throughout the year.

5. RHETORIC AND COMPOSITION. It is intended to make this an extremely practical course in the writing of English. Lectures and recitations, based on an advanced text-book, give continued attention to the principles of Rhetoric. The reading of prescribed pieces of prose and poetry, in and out of class, affords contact with the best models. The composition work proper consists of at least three short exercises a week, more or less related to the other work of the course. A longer theme is required each month. These exercises are criticised and returned, and private conferences are given the writers as often as possible. *The Principles of Rhetoric—Adams Sherman Hill.* Required of all second year students. Two sections. Five hours a week throughout the year.

6a. ENGLISH PROSE. A detailed critical study of selected examples of description, narration, exposition, and argumentation. Particular attention is paid to the principles of argumentation. Frequent written exercises and debates may be required, and each student is assigned one author for special study. The handbooks of *English Readings*, published by Holt and Co., will form the basis of the work. Required of freshmen. Three hours a week during the first term.

6b. THE ENGLISH VOCABULARY. This course will be chiefly concerned with the following points: The history of the English language; the development of the literary language from a dialect; the sources of our vocabulary; the processes of change in the meanings of words. *Words and Their Ways in English Speech—G. L. Kittredge.* Required of freshmen. Three hours a week during the second term.

7. The History of English Literature. A general survey of the progress of English literature from the Anglo-Saxon period to the present time. Important movements and significant authors are studied at considerable length, with due attention to social and political relations, and to contemporary foreign literature. The work is carried on by lectures and recitations, a large amount of work being prescribed for reading and discussion. Required of students in the Agricultural, Domestic Science, Commercial, and General Science Courses. Three hours a week throughout the year.

8. The Elizabethan Movement. This course offers an opportunity for more advanced work in one particular period of English literature. Beginning with the rise of the Renaissance spirit in England, it will give particular attention to the drama of Shakespeare and his contemporaries, and then follow the decline of the movement to the Closing of the Theatres, 1642. If possible, the Restoration period will be studied in its relation to this movement. Lectures, prescribed reading, and theses. Elective. Two hours a week throughout the year.

9. The Romantic Movement. Similar to English 8 in method and requirements. Elective. Two hours a week throughout the year. *Omitted in 1902-1903.*

10. Chaucer and Shakespeare. This is a course in careful detail study. The first term is devoted to Chaucer's Canterbury Tales, including the Prologue. Matters of grammar, pronunciation, sources, social and political allusions, and literary art all receive attention. Prominence is given to Chaucer's place in the development of the language. The second term is occupied with the interpretation of four plays of Shakespeare in somewhat the same manner. The plays read in 1902-1903 will be King Lear; Henry IV, part I; Winter's Tale; Hamlet. *Chaucer; Prologue, Knight's Tale, etc.;—ed. Morris and Skeat. Chaucer; Man of Lawe, etc.,*

—ed. Morris and Skeat. Shakespeare; Rolfe edition. Elective. Three hours a week throughout the year.

11. Anglo-Saxon and Middle English. This course is designed to furnish a basis for advanced study of the English language, and to acquaint the student with early literature in English. The text-book in Anglo-Saxon will be *Bright's Anglo-Saxon Reader;* that in Middle English will be announced later. Elective. Three hours a week throughout the year. *Omitted in 1902-1903.*

12. Elocution. The principal aim in this course is to develop easy, natural readers, who will be able to express the thought of the author in a clear and impressive manner. It also includes practical work in recitation and impersonation. Each student is expected to learn and present a recitation to the class once each month, or as often as the number in the class will allow. Elective to students who have completed Course 4.

MODERN LANGUAGES.

Professor Moench.

The courses in modern languages are designed to give the student a technical knowledge of the German, French, and Spanish languages, sufficient to read and to speak them with facility and accuracy; to present the general facts of the literary history of each language with a detailed statement of special important epochs; and to give the student, by occasional lectures, illustrated by the stereopticon, some idea of the cities, customs, and life of the people whose language is studied.

I. GERMAN.

1. Elementary Course. Practice is had in pronunciation, and systematic drill is given in grammar with special

reference to syntax. The latter part of the course is given to reading Schiller's *Das Lied von der Glocke* and about 150 pages of easy prose, with special reference to scientific matters. Optional with French or Spanish in the Commercial Course, and with French in all other college courses. Three hours credit, five recitations a week throughout the year.

2. Intermediate Course. A scientific reader is used; and Schiller's *Wilhelm Tell;* Lessing's *Minna von Barnhelm* and *Nathan der Weise* are read, in connection with German composition. Optional, as Course 1. Three hours a week throughout the year.

3. Advanced Course. Scientific reading, and the reading of Goethe's *Faust*, will be accompanied with essays on literary and philosophical subjects suggested by the reading Conversation is practiced through the entire three years and is made a feature of importance. Elective to those who have completed courses 1 and 2. Three hours a week throughout the year.

II. FRENCH.

1. Elementary Course. An outline of the essentials of French grammar is given along with exercises on pronunciation; translations are made from French into English and from English into French; easy prose selections are read from representative writers. Optional with German or Spanish in the Commercial Course, and with German in all other college courses. Three hours credit, five recitations, a week throughout the year.

2. Advanced Course. Scientific readers and other reading matter are used, with readings from the various classic authors, as Corneille, Racine, Molière, and Daudet. Conversation is made a marked feature. Optional, as Course 1. Three hours a week throughout the year.

III. SPANISH.

1. Elementary Course. Considerable time is given to the colloquial Spanish. The close relations of the United States with Central and South America and the various islands where Spanish is spoken, have increased the value of a speaking knowledge of this language. The essentials of Spanish grammar are taught; readings are selected from Spanish authors, and are made the basis of conversation. Optional with German or French in the Commercial Course. Three hours credit, five recitations, a week throughout the year.

2. Advanced Course. The more advanced work includes business correspondence, commercial terms and conversation, and readings from Spanish newspaper and magazine articles of the day. Open to those who have completed Course 1. Three hours a week throughout the year.

IV. LATIN.

To meet the demands of a large number of college students who require Latin in certain special lines of scientific work, the following courses are offered:

1. Elementary Course. In this course the students are given systematic drill in grammar and a thorough practice in pronunciation. Special attention is given to the relationship of Latin to the English language. Translations from English into Latin. During the latter part of the year, the first book of Caesar's *De Bello Gallico* are read. Smiley and Storke's *The Beginners' Latin*. Elective; five hours a week throughout the year.

2. Advanced Course. During the second year some select orations of Cicero and Livy, Books XXI and XXII, are read. Latin prose composition and the work in grammar and syntax are continued. Special work in scientific Latin

nomenclature is given, including instruction in the classification of prefixes and suffixes of Latin words used in pharmacy and medical study. Elective. Five hours a week throughout the year.

HISTORY AND CIVICS.

PROFESSOR ENGLE.

The purpose of this department is to arouse interest in historical investigation, to prepare for citizenship, to give information concerning the structure and mechanism of industrial society, to stimulate research work, and to improve methods of historical study.

1. GREEK AND ROMAN HISTORY. This course is intended chiefly as an introduction to Greek and Roman history. Thorough text-book work is required. Such reading is done as is necessary to supplement the text. It is the purpose of this work gradually to give the student broader views of history, and thus lay the foundations for advanced work in United States history. In this course the lines of historical study usually followed will be taken up. Greek history occupies the first semester, Roman history the second. Botsford's texts are to be used. Three hours a week throughout the year.

2. UNITED STATES HISTORY I. This course includes a study of the social life, political parties, territorial expansion, biography of leading characters, industrial development, military history, and historical literature of the United States. Lectures are occasionally given. Reading in the library is encouraged; written reviews are required. Contemporaneous history receives proper attention. Channing's *Student's History* is the text. Required of second year students in the Engineering Preparatory and Domestic Science courses, and of the third and fourth year students in the Manual Training

courses in Mechanic Arts and Domestic Arts respectively. Two sections, three hours a week throughout the year.

3. UNITED STATES HISTORY II. This course is designed especially for Agricultural students. It includes most of the features of the preceding course, and involves a fuller treatment of constitutional questions and the civics of history. It aims to furnish adequate preparation for intelligent American citizenship. Required of freshmen in the Agricultural course. Recitation work is based on Johnson's *Constitutional History of the United States.* Three hours a week throughout the year.

4. GENERAL HISTORY. In this course a brief outline is given of the world's history. Oriental nations, Greece, Rome, the Middle Ages, and Modern Europe are considered. The origin and development of religions, political institutions, art, philosophy, education, and laws and social life receive proper attention. The work is supplemented by appropriate lectures. Myers' *General History.* Required of second year students in the Manual Training Course in Domestic Arts, the Commercial Course, and the Engineering Preparatory Course. Two sections, three hours a week throughout the year.

(On account of the readjustment of the courses in history, course 4 will not be given after 1902-1903.)

5. CIVIL GOVERNMENT. This course deals with the history and science of government. Brief reviews are made of the development of government in the leading nations of the world. Special attention is given to the structure of government in the United States. In this course minimum time is to be given to negative criticism. Comparative work is to receive a large share of attention. Readings and book reviews are to be made an important feature. Required of students in the Commercial and General Science courses. Two hours a week throughout the year. Woodrow Wilson's *The State.*

6. INDUSTRIAL HISTORY OF THE UNITED STATES. The history of our country is here reviewed as an outgrowth of in-

ventions, manufactures, commerce ,and navigation. The effect of inventions upon industrial activity and civilization in general is traced with care. The Civil War is explained as an outgrowth of conflicting industrial systems. Elective to those who have completed Courses 1 and 2. Three hours a week during the first term.

7. CONSTITUTIONAL AMERICAN HISTORY. The work in this subject includes the evolution and interpretation of our national constitution, the relation of the commonwealth constitutions to our national government, governmental forms as they develop from early colonial activity, and the relative value of written and unwritten constitutions. Supreme court decisions, as influencing the course of our government, are studied. Landon's *Constitutional History.* Elective to those who have completed Courses 1, 2 and 3. Three hours a week during the second term.

8. ENGLISH HISTORY. In this course racial traits, literary development, constitutional growth, social life at different stages, English conservatism, origins, contributions, colonial systems, art, architecture, and pauperism are some of the topics discussed. A chief aim in the course is to teach the philosophy of history concretely. Research work is an important feature. Gardiner's *History of England.* Elective to those who have completed Courses 1 and 2. Three hours a week throughout the year.

9. MODERN EUROPEAN HISTORY. In this course European history during the eighteenth and nineteenth centuries is to be considered. Prominent among the topics discussed are the causes and effects of the French revolution, the unification of Italy, the formation of the German Empire, development of the Swiss Confederation, the Crimean war, the Boer war, the Revolutions of 1832 and 1848, the Napoleonic wars, and recent affairs in Russia. Questions relating to Turkey and to the balance of power are to be carefully discussed. English reforms during the nineteenth century and her policies in India and Africa will be studied. Texts: *Re-*

construction of Europe; Europe in the Nineteenth Century; Adams' *European History.* Elective to college students. Three hours a week throughout the year.

10. SOCIOLOGY. This course presents a fundamental discussion of the elements of society—their origin, growth, relations, and interactions. The mechanism of society as it appears in modern times is discussed typically. Among the points emphasized are social composition, social constitutions, and the principle of association. Gidding's *Elements of Sociology;* Fairbank's *Sociology.* Required of juniors in the Commercial Course. Three hours a week throughout the year.

11. ECONOMICS. Three main purposes are kept in view in this course: A clear analysis of the mechanism and functions of industrial society; a fundamental discussion of wealth and monopoly—their origin, uses, and abuses; a dispassionate discussion of economic questions that have become political questions. Much reading and many theses are required. Bulloch's *Introduction to Economics* and the *Ashley Series.* Required of seniors in all college courses. Three hours a week throughout the year.

12. PHILOSOPHY OF HISTORY. This course deals with casual relations, fundamental principles, comparative discussions of civilizations, historical values, relation of geography and history, historical sources, and appropriate tests of the truthfulness of facts. Draysens' *Principles of History* Elective to those who have completed Courses 1, 2, and 3. Three hours a week during one term.

DRAWING.

MR. STUTTERED.

The work in drawing is varied to meet the needs of the several classes for whom it is designed.

1. FREE HAND DRAWING I. Required of all first year students in the Agricultural and Engineering Preparatory Courses. Two sections, two hours a week throughout the year.

(a) *Elementary:* This work embraces drawing in outline and in mass from simple casts and objects, particular attention being paid to proportion and the simple rules of perspective; the history of art and architecture; sketching in pencil and charcoal from life and objects; the history of painting and the study of composition. First term.

(b) *Advanced:* This embraces more advanced work in light and shade, drawing from full figure casts, modeling in clay, sketching in pencil and charcoal, the students making sketches to bring to class; work in color by students who have attained reasonable efficiency in drawing. Second term.

2. FREE HAND DRAWING II. Required of second year students in the Manual Training Course in Mechanic Arts. Two hours a week throughout the year.

(a) *Elementary* : This includes drawing in outline and mass from simple casts and objects, as in Course 1 (a); the history of art and architecture, its relation to the industrial arts; the study of industrial design. First term.

(b) *Advanced:* The same work is given in light and shade, drawing, modeling, and sketching, as in Course 1 (b). Original work in design is an important feature of the course.

3. FREE HAND DRAWING III. Required of third year students in the Domestic Science Course. Two hours a week throughout the year.

(a) *Elementary:* This includes drawing in outline and mass, as in Course 1 (a); the history of art, architecure, and painting; the study of household decoration and the use of color. First term.

(b) *Advanced:* This embraces more advanced work in light and shade, drawing, modeling, and sketching, as in Course 1 (b); dress and its relation to art; design. Second term.

4. ADVANCED DRAWING. This course is designed to enable those who have completed the first year's work to continue their study in the most desirable line. To those wishing to make a more earnest study of art, instruction in drawing in black and white, pen and ink, also water color and oil painting, will be given. The history of painting and composition will be more carefully entered into, in connection with a study of the lives and works of the masters of the different schools. Modeling in clay may be done by those desiring this work, casts in plaster being made in order to preserve the studies. Open as an elective to those who have completed Drawing 1, 2 or 3. Three hours a week throughout the year.

5. MECHANICAL DRAWING. This is the introductory course in mechanical drawing for students taking the Manual Training Course in Mechanic Arts. It consists of simple projections, orthographic, isometric and oblique, and linear perspective. These are illustrated as far as possible by making working drawings of the simpler exercises of the shopwork. Required of third year students in the Manual Training Course in Mechanic Arts who have completed Course 2. Two hours a week throughout the year.

6. DRAWING AND DESIGN. In this course the work is adapted to the line of shopwork which the student is pursuing. It is intended to give practice in design, with consideration for proper proportion for strength as well as for aesthetic qualities. In this course the student is expected to make his own designs for his work in the shops. Required of fourth year students in the Manual Training Course in Mechanics Arts who have completed Drawing 5. Three hours a week throughout the year.

PSYCHOLOGY.

In this course the life of the normal individual is considered. Especial attention is given to those problems that have a living interest for the student, and find illustration in his every day life. The principal topics discussed are the relation of mind and body, habit, attention, memory, imagination, association of ideas, instinct, reasoning, emotion, will, and time and space phenomena.. Elective in the General Science Course.

GEOGRAPHY.

ASSISTANT PROFESSOR ROBINSON.

To get an intelligent conception of the natural resources of countries, the physical features receive special attention. Astronomical and geological features are presented as far as the course will permit. The principal changes that have wrought the present conditions are studied, and the atmosphere and water receive attention. Map drawing and frequent reviews are features of the course. Commerce and its effect upon nations are considered, as are also the classifications of mankind, animals, and plants. Required of all students in the Preparatory Course, and of first year students in the Manual Training Course in Mechanic Arts. Four sections; five hours a week throughout the year.

MILITARY SCIENCE AND TACTICS.

MR. BEERS.

All male students of the College, except those physically disabled, are required to take two years' work in the military department. The government furnishes Springfield cadet rifles and equipment for infantry drill, and two three-inch rifled cannons for artillery instruction. A uniform, consisting of campaign hat, dark blue blouse, light blue trousers, and white regulation gloves must be worn by the cadets. Arrangements have been made for obtaining this uniform through the secretary of the college at actual cost. The cost of the uniform is about $13.50. All students of the College taking drill are required to obtain the prescribed uniform, which must be worn upon all occasions of drill, or when students are receiving any other military instruction.

The attention of students intending to enter College is called to the fact that this uniform has been found more serviceable than a suit of civilian clothes of the same price, and students are required to make arrangements so as to be able to order this uniform when they enter.

Twice a week throughout the year, the officers of the department meet for discussion of matters relating to military work, and for recitations in the United States Infantry drill regulations.

1. INFANTRY DRILL. This includes all the movements described in the drill regulations of the U. S. army, from the gymnastic instruction in the setting-up exercise, the school of the soldier, the bayonet exercise, to the drill by company and battalion; exercise in estimating distances by sign and also by sound; target practice with rifle, for which the government makes an annual allowance of ammunition; instruction in signaling with flag, and in military telegraphy.

2. ARTILLERY DRILL. This embraces drill in the manual of the piece, and target practice when practicable.

3. CALISTHENICS. During the winter months systematic progress cannot be made in the regular drill work. The purpose of the department, during this time, is to maintain the ground already covered. With this object in view, the regular drill is given only twice a week. However, during the remainder of the time a thorough course is given in military calisthenics. The object of this course is to give the cadets a healthy body with a proper military carriage. Required of all cadets.

4. THEORETICAL INSTRUCTION. During the second term of the second year, a systematic course is given in military science, by means of lectures. The following texts are used in this course: Califf's *Notes on Military Science;* Hamilton's *Elementary Principles Connected with the Art of War;* Wagner's *Tactics.*

PENMANSHIP.

MR. MAUGHAN.

The course in penmanship consists of blackboard and individual instruction. Required of all students in the Preparatory Course, and of first year students in the Manual Training Courses in Mechanic Arts and Domestic Arts. Two sections; section 1 (1, 2), daily, at 10:40 ;section 2 (3, 4), daily, at 2:50.

MUSIC.

MR. MITTON.

A chorus of mixed voices, and also a male chorus, is organized, composed of all students who wish to join; and instruction in choral work of a high order is given. Every effort is made to cultivate a taste for music and to assist the students in acquiring a knowledge of the same. An orchestra and a military band will be organized at the beginning of the year, and arrangements will be made for regular instruction and practice. Persons desiring to join the orchestra or the band, who own instruments, will find it advantageous to bring their instruments with them for home practice.

PHYSICAL CULTURE.

MISS MOENCH.

All lady students of the College are required to have two years of physical training. For this work it will be necessary that each student have a suit consisting of divided skirt, blouse, and slippers, with rubber soles. The entire costume will be ordered by the College, and furnished to the student at the actual wholesale cost. The student will thus be saved the labor of making the suit, and will have the advantage of a suit well made, neatly fitting, comfortable, and serviceable. Every student will be expected to come prepared to order her suit immediately upon entering the College. The cost of the entire suit, including slippers, will be about $4.

1. JUNIOR GYMNASTICS. Students entering the College having had no previous training in physical education, will register for this course. The aim will be to establish a correct carriage of the body, to overcome physical defects, to produce symmetrical development, to strengthen the muscles, and to relieve the tention of brain work. To this end, work will be given in German free-hand movements, Swedish gymnastics, military and fancy marching, the famous Gilbert steps, and light work with dumb-bells, Indian clubs, wands, etc.

2. SENIOR GYMNASTICS. Students who have had in the College gymnasium, first year work, or who have had its equivalent elsewhere, will be admitted to the senior class. The aim of this course will be to strengthen the results already accomplished, and to acquire elasticity, poise, grace, and ease of manner. For this purpose will be given more difficult exercises with the light apparatus, drill with heavy apparatus, advanced movements in the Swedish and in the German systems, Grecian dances, the Old Colonial Minuet, etc.

A special class in modern French duel fencing will be organized the latter part of the second term. In addition to the gymnasium work, ladies' basket-ball teams and tennis clubs will be formed under the direction of the Athletic Committee.

Once a month the students in both courses will meet for instruction on topics pertaining to physical education, health, and social decorum.

ATHLETICS.

MR. CAMPBELL.

There has been seeded a ten-acre plat of ground east of the College building for athletic work. Baths and lockers have been provided for the accommodation of the men in training. The work in athletics is under the supervision of an instructor, whose aim is the proper physical education of the students. Men competing on the various College teams must first pass a satisfactory physical examination. The work includes football, basket-ball, base-ball, tennis, track athletics, etc. During the winter months, arrangements will be made for regular, systematic gymnasium work.

Winter Courses.

AGRICULTURE.

1. Agronomy. This course will embrace a discussion of the following topics: The atmosphere as a source of plant food; the soil—its formation and classification, the compounds it contains as sources of plant food; the plant—how it grows, feeds, matures, and the animal food product it yields; how to maintain the fertility of Utah soils; rotation of crops; irrigation in its relation to the production of crops. Five hours a week.

2. Judging and Management of Live Stock. A discussion of the various types of live stock in relation to their adaptability for various purposes on the farm, and of the principles involved in their improvement. As much time as possible will be given to the practical handling and judging of the living animals on the College farm. Craig's *Jdginug Live Stock.* Three hours a week.

3. Feeding Live Stock. The principles underlying the successful feeding of live stock on the farm and the practical applications to Utah conditions. Jordan's *Feeding Animals.* Three hours a week.

4. Dairying. A discussion of the composition and properties of milk, of milk testing, and of milk fermentation, etc. The manufacture of butter and cheese is fully explained. Wing's *Milk and Its Products.* Two hours a week.

5. Dairy Practice. Those who wish to specialize in dairying have opportunity for ample practice in the College dairy, which is well equipped with modern dairy apparatus.

6. Poultry. The instruction covers breeds of poultry, foods and feeding, buildings, and management. Where de-

sired, arrangements can be made for practice in operating incubators. Two hours a week.

7. HORTICULTURE. The subject of horticulture will be treated in a course of fifty lectures covering the following subjects: Selection of varieties; soil adaptation; preparation for planting; care and cultivation; commercial orcharding; picking, packing, and marketing fruit; orchard disinfection, including a careful study of prevalent orchard diseases and injurious insects, and the means of combating them; pruning of trees and treatment of tree wounds, to be demonstrated by practical work in the College orchard; top-grafting of mature trees; orchard irrigation and conservation of moisture; drainage of orchard lands; fertilization of trees for growth and for fruit, etc. Three hours a week.

8. ECONOMIC ENTOMOLOGY. This course is designed as an introduction to the more advanced work in entomology. In addition to the lectures and text-book work, students receive some training in the use of the microscope. Special attention is given to the general principles involved in dealing with injurious insects. Two hours a week.

9. VETERINARY SCIENCE. Instruction will be given on how to locate and detect the more common ailments of our domestic animals, and methods of prevention and curing are discussed. Those diseases most frequently met with in this intermountain region will receive special attention. Attention is given to ideal sanitary conditions for different animals; and common errors are pointed out and corrections suggested. Students taking this course are expected to attend the clinic each Monday. Three hours a week.

10. CHEMISTRY. A series of elementary lectures on the facts and principles of chemistry, with their application to the art of agriculture. Experimental demonstrations of the statements made will be an important feature of the work; and the collections of the College chemical department will be drawn upon freely as a mean of illustration. Two hours a week.

11. AGRICULTURAL BACTERIOLOGY. This course consists of a series of lectures and demonstrations on the relationship of bacteria to agriculture. The purpose is to give the agriculturist a general knowledge of the fundamental facts of bacteriology, as they are related to agriculture; and to show that his various occupations are concerned in an attempt to obtain the aid of micro-organisms where they may be of advantage, and prevent their action where they would be a detriment. The subjects considered are the general nature of bacteria and fermentations; the bacteria in soil and water; the bacteria in dairy products; the relation of bacteria to miscellaneous farm products; and parasitic bacteria. Two hours a week.

12. IRRIGATION. Lectures on application of water, duty, seepage, evaporation, etc. Units for measurement of water, methods of subdivision and measurement ,and other subjects relative to the irrigation interests on the farm. Two hours a week.

13. FARM ACCOUNTING. The importance and necessity of keeping accounts on the farm are emphasized. Methods are discussed and developed. Business forms and customs are studied, and after the underlying principles have been mastered, practical work in accounting is given. Three hours a week.

DOMESTIC SCIENCE AND ART.

1. COOKING LECTURES. Preceding the cooking practice is one hour's lecture each day. These lectures treat of the composition of foods and the general chemistry of cooking; rules for measuring and mixing; best methods of baking and boiling; deep and shallow frying; marketing and the selection of food; carving and serving food. The study of bills of fare, nutritive value of different foods, and of foods that are appropriately served together, is included in this course. The regular time allowed each class for practice is two hours in two

afternoons of the week. Special arrangements will be made, however, for those who wish to devote more time to this course; also for those who wish to perfect themselves in any particular line of cooking. Five hours a week.

2. COOKING PRACTICE. This course includes practice in all kinds of plain and pastry cooking, and some fancy cooking and confectionery making. Demonstration lessons are given on breakfast breads and hot cakes; croquettes of various kinds; dressing for fowls; boning, skewering, and larding meats; braizing, roasting, broiling, and other methods of cooking meats; the preparation of soups, sauces, salads, and salad dressing, together with other subjects difficult of treatment in class practice. A three course lunch is served daily throughout the term by the members of the cooking classes. The young ladies take turns in presiding at the table as hostess, and also in waiting upon the table. The skill and confidence that they acquire by this practice is of great value to them. Two hours a week.

3. HYGIENE. Lectures are given on the sanitary conditions best for the home; the danger from damp and unclean cellars; foul drains and sinks; the necessity for pure air and sunlight in the house. Talks on diet, on the regularity of habits, on the necessity for a regular and sufficient amount of sleep; instruction on the care of personal health; home nursing and talks on hospital methods; illustrative lessons on changing beds for the sick. Five hours a week.

4. SEWING. This course includes hand and machine sewing, the students completing as much of the work outlined in Courses 1 and 2 in Sewing, given on pages 72 and 73, as they can do successfully in the time allowed for the work.

5. DRESSMAKING. Gowns are cut out, basted, and entirely made by the students. Students furnish material and make their own garments. Two hours a week.

6. DESIGNING, CUTTING, AND FITTING. Instruction is given by talks on grace in designs of costumes and harmony

of colors. Special attention is given to hygienic modes of dress. The students are taught to make drawings of the costumes they design; they also learn to draft patterns from measurements. Further practice is given in cutting and fitting. Two hours a week.

7. FANCY WORK. This course includes Kensington embroidery, Roman cut work, Spanish laid work, drawn work, jeweled embroidery, and modern lace making. Two hours a week.

8. DAIRYING. Instruction in cheese and butter-making will be given on both the factory and home dairy plans in the College dairy, to which the students of this course will be admitted. For lectures and plan of work, see Agricultural Course.

MECHANIC ARTS.

1. CARPENTRY I. Rudimentary exercises in sawing, ripping, planing, mortising, dovetailing, and the application of these to simple articles of furniture, furnish the details of this course. Correct methods of using and handling tools are emphasized.

2. CARPENTRY II. Sharpening and adjusting carpenters' tools, and saw filing, followed by practice in making panels, doors, and sashes, and simple cabinet work, constitute the work of this course.

3. FORGING I. This course consists of preliminary exercises, such as drawing, bending, twisting, and shaping, followed by exercises in iron welding and making iron tools. Accuracy in methods and results is insisted upon.

4. FORGING II. The work of this course consists of practice in steel and iron welds, steel and steel welds and general work in steel tool forging and dressing. Chisels, punches, reamers, hammers, tin shears, nippers, etc., are sample exercises. Prerequisite, Course 3.

Library and Museum Accessions.

LIBRARY ADDITIONS.

Among those to whom the Library is indebted for books and other favors received during the year 1901-1902 are: Hon. J. L. Rawlins, Hon. Thomas Kearns, Hon. George Sutherland, the Skelton Publishing Company of Provo, the several national departments and bureaus at Washington and colleges and universities of the United States and Canada.

In addition to newspapers from Utah and Southern Idaho, sent to the college through the courtesy of the publishers, and a large number of agricultural periodicals received at the Experiment Station library in exchange for the publications of the station, the following magazines are placed in the reading room for the use of the students:

LITERARY MAGAZINES.

Atlantic Monthly.
Autumn Leaves.
Book News.
Century.
Churchman.
Collier's Illustrated Weekly.
Contemporary Review.
Cosmopolitan.
Country Life.
Critic.
Dial.
Eclectic Magazine.
Edinburgh Review.
Education.
Educational Review.
Fortnightly Review.
Forum.
Harper's Bazar.
Harper's Monthly.
Harper's Weekly.
Improvement Era.
Journal of Education.
Ladies' Home Journal.
Literary Digest.
McClure's Magazine.
Munsey's Magazine.

Nation.
Nineteenth Century Review.
North American Review.
Outlook.
Philippine Review.
Reader's Guide to Periodical Literature.
Review of Reviews, Am. Ed.
Saturday Evening Post.
Scribner's Magazine.
University Chronicle.
Westminster Review.
White and Blue.
World's Work.
Woman's Journal.
Young Woman's Journal.
Youth's Companion.

SCIENTIFIC AND TECHNICAL MAGAZINES.

American Cabinet Maker and Upholsterer.
American Florist.
American Gardening.
American Geologist.
American Historical Review.
American Kitchen Magazine.
American Machinist.
American Naturalist.
American Veterinary Review.
Art Journal.
Blacksmith and Wheel Wright.
Bookkeeper.
Boston Cooking School Magazine.
Botanical Gazette.
Breeder's Gazette.
Business World.
Carpentry and Building.
Country Gentleman.
Delineator.
Designer.
Dietic Magazine.
Dun's Review.
Engineering Magazine.
Etude.
Farm Poultry.
Farmer's Review.
Good Health.
Good Housekeeping.
Home Art.
House Beautiful.
Johns Hopkins' University Studies.
Journal of American Chemical Society.
Journal of Geology.
Le Bon Ton.
Library Journal.
Modern Priscilla.
Nature.
Pacific Rural Press.
Political Science Quarterly.
Popular Science Monthly.
Poultry Monthly.
Public Libraries.

Quarterly Journal of Economics.
Sanitarian.
School Review.
Science.
Scientific American.
Scientific American, Builder's Edition.
Scientific American, Supplement.
Torrey Botanical Club.
Werner's Magazine.
Western Penman, Professional Edition.

DONATIONS TO THE MUSEUMS.

During the year 1901-1902 the College Museums have received the following contributions:

DEPARTMENT OF ANIMAL INDUSTRY.

Articles.	Donors.
Cattle Salt, 100 lbs.	Inland Crystal Salt Co.
Butter Culture, four samples.	O'Douglass Butter Culture Co.
Chloro. Napthalene Sheep Dip, 5 gallons	The West Disinfectant Co.
Butter Color, one gallon	Wells, Richardson & Co.
One Calf Feeder	Our Husbands Mfg. Co.
"U. S." Hand Cream Separator, loan	Vermont Farm Machine Co.
"Empire" Hand Cream Separator, loan	U. S. Butter Extractor Co.
"Argos" Hand Babcock Milk Test, loan	Vermont Farm Machine Co.
Cattle Breeding Record	John Sparks.
Two Rambouillet Ewes	W. S. Hansen.
Shropshire Sheep Record, 15 volumes	Mortimer Levering.
Leicester Sheep Record, 3 volumes	A. J. Temple.
Southdown Sheep Record, 8 volumes	John L. Springer.

Hampshire Down Sheep Record, 4 volumes	C. A. Taylor.
Acaprin Sheep Dip, two 10-kilo tins	Farbenfabriken Elberfeld Co.
A pair of Persian Fat-tailed Sheep	John Sparks.
Collections of Drawings of Percheron and French Coach Horses	Dunham, Fletcher & Coleman.
Stewart Sheep Shearing Machine (Hand)	Chicago Flexible Shaft Co.

DEPARTMENT OF AGRONOMY.

Articles.	Donors.
One Stubble Plow (Walking)	Syracuse Chilled Plow Co.
One Model Solid Comfort Sulky Plow	George A. Lowe.
One Model Plant Cultivator	George A. Lowe.
One Old English Broad Ax	James Lofthouse.

DEPARTMENT OF ANIMAL BIOLOGY.

Articles.	Donors.
Ninety-six Species of Marine Invertebrates	National Museum, Washington

Alumini Association.

The Alumni Association was organized in June, 1899. All those who hold degrees in any of the courses of the College are eligible to membership. In the first two classes, three students were graduated with the degree of Bachelor of Civil Engineering (B. C. E.). Since 1895, five prescribed courses have been offered, but the degree in each has been Bachelor of Science (B. S.), the particular course being specified in the diploma.

OFFICERS FOR 1902-1903.

Rose Homer, '00, President.
William Peterson, '99, First Vice President.
Mrs. Anna Beers Petty, '98, Second Vice President.
Lewis A. Merrill, '95, Secretary.
William D. Beers, '99, Treasurer.

Ninth Annual Commencement.

GRADUATES, 1902.

WITH DEGREES.

Amanda Holmgren (General Science in Domestic Science)	Brigham City.
Edward Parley Pulley (General Science in Mechanical Engineering)	American Fork.
Robert Stewart (General Science)	Plain City.

WITH CERTIFICATES.

Anne J. Davis (Commercial Course)	Malad, Idaho.
Charles Arthur McCausland (Commercial Course)	Logan.
Lafayette Mills Sidwell (Manual Training Course in Mechanic Arts)	Manti.
David M. Stephens (Commercial Course)	Malad, Idaho

Catalogue of Students.

SENIORS.

Holmgren, Amanda	Brigham City.
Pulley, Edward Parley	Logan.
Stewart, Robert	Plain City.

JUNIORS.

Borlase, John Albert	West Jordan.
Caine, John T.	Logan.
Callister, Thomas Clark	Fillmore.
Fisher, Grace	Orleans, Indiana.
Fisher, Ray Homer	Oxford, Idaho.
Holmgren, Lydia	Brigham City.
Homer, Roy Fisher	Oxford, Idaho.
Maughan, Josephine F.	Petersboro.
Maughan, May	Logan.
Merrill, Ambrose Pond	Richmond.
Merrill, Preston Reynolds	Richmond.
Nebeker, Aquilla Chauncey	Laketown
Pile, Frederick Dole	Opal, Wyoming
Santschi, Eugene	Castle Gate.

SOPHOMORES.

Ballantyne, Richard Stewart	Logan.
Caine, Blanche E.	Logan
Crawford, Edmund	Manti.
Davis, Richard Bowen	Cherry Creek, Idaho.
Egbert, Geneva	Logan.
Greaves, Joseph F.	Preston, Idaho.
Jardine, William	Cherry Creek, Idaho.

Maughan, Alice F.	Petersboro.
Maughan, Ella	Logan.
Pierce, Eugenie Snow	Brigham City.
Stephens, David	Malad, Idaho.
Swendsen, Warrren Gibbs	Blackfoot, Idaho.
West, Frank Lorenzo	Ogden.
West, Ray Benedict	Ogden.

FRESHMEN.

Adams, Orval Webster	Logan.
Allred, Irvin	Spring City.
Cotterall, Archie S.	Farmington.
Darley, Charles Thirkell	Wellsville.
Goodwin, Sarah Logan	Logan
Hansen, Seth Alfred	Logan.
Harrison, Eliza	Liberty, Idaho.
Hepworth, James Edward	Salt Lake City.
Howard, Lila	Rockland, Idaho
Humphreys, LeGrand	Paris, Idaho.
Jardine, James	Cherry Creek, Idaho.
Jenkins, John Lewis	Elkhorn, Idaho.
Jensen, William Arthur	Logan.
Jeppson, David Fernando	Brigham City.
Kerr, William Horace	Logan.
La Munyon, Lynne	Shoshone, Idaho.
Lee, Oscar Severin	Brigham City.
Lemmon, Claude Alumbee	Parowan.
Littlefield, John Cottle	Ogden.
Lundberg, Fred Lorraine	Logan.
Mather, Howard Artemas	Salmon, Idaho.
Merrrill, Melvin Clarence	Richmond.
Neilsen, Teresa	Preston, Idaho.
Peterson, Elmer George	Baker City, Oregon.
Rees, David, Jr.	Castle Rock.
Rich, Samuel Grover	Blackfoot, Idaho.
Smart, Iva	Franklin, Idaho.

Smith, James Henry	Boise, Idaho.
Snow, Joseph Marcellus	Salt Lake City.
Snow, Valentine Simmons	Salt Lake City
Wright, Mabel Lucille	Logan.

SPECIAL.

Adams, Rufus William	Kaysville
Baker, Rena	Salt Lake City.
Ball, Lizzie May	Wasatch.
Barber, Lucile	Logan.
Barnes, Joseph	Fairview.
Beck, Moroni Thomas	Newton.
Child, Gladys	Lima, Montana.
Child, Nellie	Lima, Montana.
Clark, Avery	Logan
Cole, Ira Arnold	Logan.
Dewey, Edna	Dewey.
Eakle, Henry Kennedy	Salt Lake City.
Farr, Sarah A.	Logan.
Grace, Margaret Alice	Weston, Idaho.
Hansen, Charles W.	Logan
Hansen, Dagmar	Logan.
Hansen, Nellie Page	Logan.
Hansen, Oswald	Logan.
Hohl, Margaret Abigail	Ouray, Colorado.
Hohn, E. S.	Logan.
Howell, Millie	Logan.
Iverson, Orlando	Brigham City.
Jacobson, Alma Gustave	Logan.
Jardine, Frank	Clarkston.
Jennings, Lucile	Salt Lake City.
Jensen, George	Logan.
Jones, Rose	Logan.
Kerr, Leonora Hamilton	Logan.
Knox, John Gatlin	Logan.
LaFount, Arthur Charles	Logan.

Lundgren, Alice M.	Lund, Idaho.
Marble, E. H.	Dewey.
Merrill, Elmer Justin	Richmond.
Nebeker, Ella	Logan.
Nibley, Joel	Logan.
Nibley, Joseph	Baker, Oregon.
Nibley, Preston	Logan.
Nielsen, Dora	Logan.
Ormsby, Mabel	Logan.
Ormsby, Mrs. M. S.	Logan.
Osmond, Alice Maud	Bloomington, Idaho.
Parkinson, George Taggart	Logan.
Paulson, Nels Peter	Logan.
Peterson, Matilda	Logan.
Peterson, Minnie	Logan.
Peterson, Thyra	Logan.
Preston, Katharine	Logan.
Raymond, Annie L.	Logan.
Reed, Benjamin	Payette, Idaho.
Reeder, Aletha	Logan
Roberts, Vida Margaret	Layton.
Shanklin, Mathew Alexander	Erie, Michigan.
Shurtliff, A. E.	Baker, Oregon.
Smith, David	Kaysville.
Smith, David H	Logan
Smith, Effie E	Logan.
Smith, John P.	Logan
Stewart, Israel	Logan.
Taylor, George F.	Plain City.
Taylor, Sara	Logan.
Thatcher, Florence B.	Logan.
Thatcher, Genevieve	Logan.
Thatcher, Lawrence	Logan
Thomas, Burton L.	Bloomington, Idaho.
Welker, Georgina	Bloomington, Idaho.
Wendelboe, Charlie C.	Logan.

Wilkinson, Margaret	Logan.
Young, George Franklin	Fairview.

AGRICULTURE.

Second Year.

Crismon, George W.	Salt Lake City.
Dunford, Isaac Clayton	Salt Lake City.
Hanks, Alfred Lyman	Tooele.
Howard, Edward Lorenzo	Rockland, Idaho.
Squires, Alonzo	Logan.

First Year.

Ford, Alfred	Wallsburg.
Irvine, Cecil	Salt Lake City.
Jordan, Alvin Edgar	Alicel, Oregon.
McCarty, Edgar Cox	Monroe.
Nibley, Merrill	Baker, Oregon
Page, Thomas P.	Riverton.
Peterson, John A.	Ogden.
Pond, Casper Whitttle	Thatcher, Idaho.
Taylor, Joseph Edward	Salt Lake City.

Winter Course.

Andreason, Andrew	Mink Creek, Idaho.
Atkin, Joseph Thompson	St. George
Ballantyne, Alando B.	Logan.
Christensen, Ephraim	Logan.
Crockett, Henry Wallace	Logan.
Fredrickson, Fred	Brigham City.
Lowe, Charles	Ward, Idaho.
Smith, Richard William	Logan.

DOMESTIC ARTS.

Second Year.

Barber, Myrtle	Marysvale.
Merrill, Mrs. Effie	Logan.
Stephens, Lydia	Malad, Idaho.

First Year.

Bishop, Della	Logan.
Bishop, Frances	Logan.
Cooper, Mary	McCammon, Idaho
Crookston, Allie	Logan.
Davidson, Martha	Greenville.
Davidson, Nellie	Greenville.
Duckworth, Verna	Greenville.
Egbert, Maude	Logan.
Eliason, Elva	Logan.
Hayball, Nellie	Logan.
Jorgensen, Orilla	Hyde Park
Kidd, Iva	Providence
King, Priscilla	Logan.
Matthews, Ada	Grantsville.
Munk, Josie	Manti.
Nebeker, Laura	Logan.
Ormsby, Sybil	Logan.
Parkinson, Thresa	Franklin, Idaho.
Peterson, Lena	Preston, Idaho.
Reeder, Hattie	Hyde Park.
Scarborough, Tressie	Franklin, Idaho.
Smith, Mabel	Greenville.
Sprague, Minnie	Ogden.
Stoddard, Eva	Logan.
Swendsen, Meda	Richmond.
Thomas, Rose	Ogden.
Vibrans, Gertrude	Cokeville, Wyoming.
Whipple, Annie M	St. George.
Wright, Blanche Evelyn	Logan.

COMMERCE.

Third Year.

Davis, Anne J	Malad, Idaho.
McCausland, Charles Arthur	Logan.

Second Year.

Affleck, Alonzo Adam	Logan.
Beckstead, Bertie	Swan Lake, Idaho.
Beckstead, Leo	Swan Lake, Idaho.
Bradley, Louisa	Hyrum
Clark, Edward John	Benson.
Coburn, John Leatham	Wellsville.
Cooper, Coral	McCammon, Idaho.
Cooper, Robert McEwan	Nephi.
Cordon, Edwin V	Willard
Duncan, Leonard Ellsworth	American Fork.
Ellsmore, James Austin	American Fork.
Farrell, Francis David	Smithfield.
Forgeon, Mildred	Cokeville, Wyoming.
Fredrickson, John Julius	Malad, Idaho.
Hammond, Joseph	Ursine, Nevada
Hansen, Corinne	Salt Lake City.
Hansen, Severin	Weston, Idaho.
Hellewell, George Edward	Downey, Idaho.
Hellewell, Mary Ann Bennett	Downey, Idaho.
Howard, Charles	Rockland, Idaho.
Hyde, John William	Nephi.
Jacobsen, Marie	Cokeville, Wyoming.
Jeppson, August	Brigham City.
Johnson, Willis DeWitt	Laketown.
Jones, Richard William	Logan.
Lish, Emma	Logan.
Lytle, Freeland	Ursine, Nevada.
Lytle, Samuel	Ursine, Nevada
McNeil, Charles	Logan.
Nebeker, Effie	Logan.
Nielsen, Niels Peter, Jr	Logan
Olsen, Swan	Logan.
Parkinson, Leonard	Franklin, Idaho.
Peterson, Mattie Othelia	Smithfield.

Quayle, William	Logan.
Richardson, Parley C.	Plain City.
Robinson, John R.	Paragoonah.
Smith, Magnus C.	Philadelphia, Pa.
Stevens, Clarence E.	Holden.
Tuttle, John Henry	Manti
Tyson, Abraham	Randolph.
Walton, George Ossian	Logan.
Whitmore, Roscoe Philip	Nephi.

First Year.

Adams, Hugh Robert	Logan.
Berryman, Harry	Blackfoot, Idaho.
Black, William Henry	Kanosh.
Brossard, Fred Utilus	Logan.
Busenbark, Mabel Doris	Collinston
Chipman, Dell	Salt Lake City.
Corlett, Moria	Cleveland, Ohio.
Coy, Walter, James	Plain City.
Daniels, Mary	Malad, Idaho.
Darley, William Owen	Wellsville.
Davidson, John Nutin	Spencer, Idaho.
Dunn, Charles Welch	College.
Eldredge, Earl	Coalville.
Farnsworth, Dennis	Beaver.
Fife, Lewis	Providence.
Findlay, John Fuller	Kanab.
Gleed, Henry	Lima, Montana.
Green, Margaret Davinie	Layton.
Grose, George	Park City.
Gulley, Clarence	Butte, Montana.
Hess, Florence Edna	Georgetown, Idaho.
Hill, Leroy S.	Wellsville.
Hobson, George C.	Logan.
Izatt, Kate	Logan.
Jensen, Emille George	Brigham City.

Jenson, Fred Russell	Manti.
Jessop, Lilliath	Millville.
Jones, Charles Albert	Dayton, Idaho.
Lee, Camilla	Brigham City
McKinnon, Archibald William	Randolph.
Madsen, Parley Christian	Manti.
Mawhinney, Hugh Sloan	Park City.
Morgan, Wayne	Brigham City.
Mortesen, Anna	Huntsville.
Nebeker, Lurena	Laketown.
Nicholas, Martha	Malad, Idaho.
Nielsen, Hyrum Carl	Preston, Idaho.
Owens, Madison S.	Logan.
Parkinson, Edward S.	Franklin, Idaho.
Raymond, Alonzo	McCammon, Idaho.
Rich, Joseph C.	Hot Springs, Idaho.
Riter, Benajmin Franklin	Logan
Roberts, Ernest Peter	Afton, Wyoming.
Sampson, Irving	Silver City, Idaho.
Smart, Carl	Logan.
Smith, Abraham	Poplar, Idaho.
Sorenson, Rose	Logan.
Stephens, Daniel	Challis, Idaho.
Stoddard, Archibald W.	Spencer, Idaho.
Stohl, David	Brigham City.
Tarbet, William	Logan.
Tarbet, David	Logan.
Yearsley, William	Menan, Idaho.

MANUAL TRAINING.

DOMESTIC ARTS.

Third Year.

Benson, Eva	Logan.

Second Year.

Campbell, Rachel	Salt Lake City.
Davis, Mary C.	Malad, Idaho.
Gillett, Ursula	Tooele.
Hansen, Ida	Logan.
Hess, May	Georgetown, Idaho.
Lowe, Laura	Franklin, Idaho.
Morrell, Mamie	Logan.
Nelson, Cora	Salt Lake City.
Nibley, Julia	Logan.
Schettler, Anna E.	Logan.
Simmons, Melissa J.	Richfield.
Thomas, Louie	Logan.
West, Lucretia	Salt Lake City.
Wilson, Dorothea	Randolph.

First Year.

Blechert, Augusta	Geneva, Idaho.
Davis, Dora M.	Clifton, Idaho.
Drysdale, Sadie	Logan.
Evans, Maude	Arbon, Idaho.
Gregory, Amy L.	Cove.
Hanson, Etta	Logan.
Kerr, Bertha	Richmond.
Lowe, Nora M.	Franklin, Idaho.
Miller, Eva	Providence.
Moon, Annie	Henderson Creek, Idaho.
Moon, Nellie	Henderson Creek, Idaho.
Nokes, Matilda	Riverton.
Porter, Bertha	Porterville.

Quayle, Catherine	Dingle, Idaho.
Quayle, Dora	Dingle, Idaho.
Quayle, Nettie	Dingle, Idaho
Racker, Maud Lillian	Lehi.
Snowball, Silva	Randolph.
Ward, Rose	Pocatello, Idaho.

MECHANIC ARTS.

Third Year.

Sidwell, Lafayette Mills	Manti.

Second Year.

Casto, Raymond R.	Custer, Idaho.
Clark, Elijah	St. Charles, Idaho.
Davis, Levi Thomas	Castle Gate.
Fonnesbeck, Victor	Logan.
Hepworth, Samuel Leroy	Salt Lake City.
McKinney, Clarence	Salmon, Idaho
Madsen, Howard Peter	Manti.
Palmer, Parley	Aurora.
Pugmire, Jonathan Rich	St. Charles, Idaho.
Taylor, David Matthew	Payson.
Young, William	Castle Gate.

First Year.

Archibald, James Henry	Wellsville.
Beck, Anthon Louis	Paris, Idaho.
Blake, Isaac Brigham	Pima, Arizona.
Brenchley, John	Wellsville.
Briggs, John Thomas	Bountiful.
Brown, George Washington	Ogden.
Chesley, Charles Frederick	Fillmore.
Eccles, William, Jr	Ogden.
Eccles, William Elmer	Ogden.
Elam, Millard	Salt Lake City.
Fisher, Roscoe Albert	Bountiful.

Fuhriman, Godfrey Jared	Providence
Fullmer, Joseph Thatcher	Logan.
Gordon, Benjamin	Murray.
Grant, Charles Henry	Oxford, Idaho.
Gregory, Thomas Joseph	Cove.
Hansen, George	
Hinckey, Nathan Roy	Rexburg, Idaho.
Hughes, Gomer	Samaria, Idaho.
Jinks, Edwin	Logan.
Kearl, Christopher James	Laketown.
Kerr, John Andrew	Richmond.
Kidman, Frederick James	Mendon.
Labrum, William Arthur	Meadow.
Larsen, Lorenzo	Georgetown, Idaho.
Larson, William	Newton.
Mason, Frank Marion	Willard.
Nelsen, Francis Eugene	Greenville.
Nicholes, Josiah Ernest	Coyoto.
Passey, Edward John	Paris, Idaho.
Peck, Edward Burton	Roswell, Idaho.
Redford, Abraham Knight	Logan.
Rolapp, Henry Karl	Ogden.
Ross, Ray Arthur	Ogden.
Scarborough, Joseph	Franklin, Idaho.
Shurtliff, Jesse	Harrisville.
Squires, Leo Maiben	Logan.
Stoddard, Delbert Chase	Georgetown, Idaho.
Swenson, Daniel Arthur	Pleasant Grove.
Tegtmeyer, Christian	Logan.
Toombs, Roy Chandler	Carlin, Nevada.
Webb, Melvin Jesse	Monroe.
West, Frank Leroy	Morgan.
Whipple, Charles	St. George.
Wilde, Benjamin Charles	Coalville.
Wilde, Joseph	Coalville.
Willis, Arthur Willis	Kanarra

Winter Course, Second Year.

Blanchard, Henry	Logan.
Davis, Earl	Wallsburg.
Hughes, Robert	Samaria, Idaho.
Miller, Alma	Providence.

Winter Course, First Year.

Allred, Emanuel A.	Fairview,
Andrews, Jobin Lynon	Logan.
Andrews, John Montgomery	Logan.
Andrews, Junius James	Logan.
Bissegger, August John	Providence.
Blanchard, Asarl	Logan.
Chugg, Ezra Albert	Providence.
Crookston, Oscar	Greenville.
Erickson, Joseph Alma	Willard
Glenn, Israel Lund	Wellsville.
Gray, Bert	
Hugi, William Christian	Logan.
Johnson, Joseph Erastus	Moroni.
Larsen, Peter	Greenville.
Maughan, George	Greenville.
McDermaid, William	Diamondville, Wyoming.
McNeal, Robert	Logan
Nelson, Alex	Logan.
Nelson, Thomas Edward	Logan.
Nyman, Andrew	Greenville.
Peterson, Austin	Logan.
Peterson, Nephi	Logan.
Peterson, Oliver	Logan.
Rees, Philip	Cherry Creek, Idaho.
Robbins, Walter James	Stone, Idaho
Scott, George Washington	Salt Lake City.
Smith, Leroy	Greenville.

ENGINEERING PREPARATORY.

First Year.

Allan, Ernest Maughan	Wellsville.
Archibald, Allen Henry	Wellsville.
Bjerregard, Walter	Ephraim.
Christensen, Peter Victor	Hyrum.
Colby, LeGrande	Mendon.
Davenport, Frank Remington	Hood River, Oregon.
Dunn, Oscar Smith	College.
Eccles, Royal	Ogden.
Finlayson, George Clifford	Logan.
Gillett, Perry	Tooele.
Harris, Francis Meville	Butte, Montana.
Hoggan, Walter John	Manti.
Holdaway, Dean David	Price.
Horton, John Raymond	Ogden.
Howell, Luther Maughan	Wellsville.
Jennings, Frank Kimball	Salt Lake.
Jennings, Joseph Devereaux	Salt Lake.
Johnson, Chester Kearl	Laketown.
Johnson, Harvey Cris	Logan.
Johnson, Heleman	Logan.
Kearns, James Leonard	Park City.
Langton, Seth Alma, Jr	Logan.
Laughney, Clarence Edmund	Ogden.
Lee, Oscar Richard	American Fork.
Lewis, James Leonard	Logan.
Lewis, William	Logan.
McDonald, Richard	Hayden, Idaho.
McNaughton, Lorenzo Ellsworth	Vernal.
Mortensen, Hardy	Levan.
Moses, Jesse Tilton	Smithfield.
Oldham, James Henry	Logan.
Palmer, A. M	Oxford, Idaho.

Perry, Seth Eugene	Vernal.
Powell, Jonathan Sockwell	Payson.
Schaub, Eugene	Logan.
Thatcher, Edgar	Logan.
Turner, Thomas Henry	Ogden.

PREPARATORY.

Abel, Robert	Lewiston.
Adams, Dennis Elias	Thatcher.
Adams, George Edward	Logan.
Adams, George Winfield	Layton.
Adams, Jabez Samuel	Layton.
Andrews, Michael	Logan.
Beck, Heber	Newton.
Bickmore, Newman David	Paradise.
Blechert, Johanna	Geneva, Idaho.
Bloom, Charles Ernest	Salmon, Idaho.
Bunce, John	Logan.
Byers, Mary	Kemerer, Wyoming.
Caine, Lawrence Ballif	Logan.
Carlos, Oscar	Layton.
Carruthers, Clyde	Market Lake, Idaho.
Clark, Roy W	Gunnison.
Cohn, Jerome Guy	Oneida, Idaho.
Davis, Thomas Jones	Malad, Idaho.
Edmunds, Lorenzo	Salt Lake City.
Egbert, Reuben Gardner	Logan.
Fjelsted, Martha	Riverside, Idaho.
Fonnesbeck, Leon	Logan.
Gabrielson, Hans Martin	Logan.
Germer, Martin Louis	Bay Horse, Idaho.
Hall, Leroy Williamson	Wellsville.
Hansen, Hyrum Orson	Weston, Idaho.
Hellewell, Jannetta I	Downey, Idaho.
Hess, Clarence Wilson	Georgetown, Idaho.

Jacques, David	Logan.
Johnson, Christian	Logan.
Johnson, Eugene	Millville.
Kearl, Willis Ellsworth	Laketown.
Kennington, George	Afton, Wyoming.
Kerr, Joseph Marion	Ora, Idaho.
Kidman, Harriet Maria	Petersboro.
Larsen, Orsen	Millville
Larson, August	Millville.
Layton, Benjamin	Layton.
Lowe, Mahias	Franklin, Idaho.
McCulloch, Lorinda	Weston, Idaho.
McNeil, William	Logan.
Marriott, Bertha Delania	Plain City.
Mouritzen, Andrew	Logan.
Nebeker, Eva Magdalene	Logan.
Nebeker, Luella	Laketown.
Nebeker, Mabel	Laketown.
Olofson, Oscar	Logan.
Olson, John Emil	Logan
Parkinson, William Franklin	Baker, Oregon.
Pearce, Flora	Randolph.
Peterson, Charles Joel	Preston, Idaho
Peterson, Rebecca Amelia	Smithfield.
Poulsen, George W	Logan
Poulter, Lee	Logan.
Pullum, Isaac Leroy	Trenton.
Quayle, Jeannette	Dingle, Idaho.
Robb, Thomas William	Paragoonah
Roberts, David Willen	Logan.
Roberts, Frank Arthur	Afton, Wyoming.
Scott, Arthur Leroy	Millville.
Sidwell, Gideon Wilson	Manti.
Simmons, Robert	Layton.
Smith, Alexander	Logan.
Taylor, Clara Ethel	Cokeville, Wyoming.

Thomas, Carrie	Logan.
Thomas, Daniel Francis	Ogden.
Thompson, Terrence	Ogden.
Thomsen, Alvin Winger	Logan.
Toombs, Wallace R.	Carlin, Nevada.
Walsh, William James	Huston, Idaho.
Walton, William Wallace	Auburn.
Woodward, Harry Thomas	Corinne
Wright, George William	Franklin, Idaho.

SUMMARY OF STUDENTS.

Seniors	3
Juniors	14
Sophomores	14
Freshmen	31
Special	68
Third Year	4
Second Year	80
First Year	229
Preparatory	73
Total	516

MANUAL TRAINING.

DOMESTIC ARTS.

Third Year.

Benson, Eva	Logan.

Second Year.

Campbell, Rachel	Salt Lake City.
Davis, Mary C.	Malad, Idaho.
Gillett, Ursula	Tooele.
Hansen, Ida	Logan.
Hess, May	Georgetown, Idaho.
Lowe, Laura	Franklin, Idaho.
Morrell, Mamie	Logan.
Nelson, Cora	Salt Lake City.
Nibley, Julia	Logan.
Schettler, Anna E.	Logan.
Simmons, Melissa J.	Richfield.
Thomas, Louie	Logan.
West, Lucretia	Salt Lake City.
Wilson, Dorothea	Randolph.

First Year.

Blechert, Augusta	Geneva, Idaho.
Davis, Dora M.	Clifton, Idaho.
Drysdale, Sadie	Logan.
Evans, Maude	Arbon, Idaho.
Gregory, Amy L.	Cove.
Hanson, Etta	Logan.
Kerr, Bertha	Richmond.
Lowe, Nora M.	Franklin, Idaho.
Miller, Eva	Providence.
Moon, Annie	Henderson Creek, Idaho.
Moon, Nellie	Henderson Creek, Idaho.
Nokes, Matilda	Riverton.
Porter, Bertha	Porterville.

Quayle, Catherine	Dingle, Idaho.
Quayle, Dora	Dingle, Idaho.
Quayle, Nettie	Dingle, Idaho
Racker, Maud Lillian	Lehi.
Snowball, Silva	Randolph.
Ward, Rose	Pocatello, Idaho.

MECHANIC ARTS.

Third Year.

Sidwell, Lafayette Mills	Manti.

Second Year.

Casto, Raymond R.	Custer, Idaho.
Clark, Elijah	St. Charles, Idaho.
Davis, Levi Thomas	Castle Gate.
Fonnesbeck, Victor	Logan.
Hepworth, Samuel Leroy	Salt Lake City.
McKinney, Clarence	Salmon, Idaho
Madsen, Howard Peter	Manti.
Palmer, Parley	Aurora.
Pugmire, Jonathan Rich	St. Charles, Idaho.
Taylor, David Matthew	Payson.
Young, William	Castle Gate.

First Year.

Archibald, James Henry	Wellsville.
Beck, Anthon Louis	Paris, Idaho.
Blake, Isaac Brigham	Pima, Arizona.
Brenchley, John	Wellsville.
Briggs, John Thomas	Bountiful.
Brown, George Washington	Ogden.
Chesley, Charles Frederick	Fillmore.
Eccles, William, Jr.	Ogden.
Eccles, William Elmer	Ogden.
Elam, Millard	Salt Lake City.
Fisher, Roscoe Albert	Bountiful.

Fuhriman, Godfrey Jared	Providence
Fullmer, Joseph Thatcher	Logan.
Gordon, Benjamin	Murray.
Grant, Charles Henry	Oxford, Idaho.
Gregory, Thomas Joseph	Cove.
Hansen, George	
Hinckey, Nathan Roy	Rexburg, Idaho.
Hughes, Gomer	Samaria, Idaho.
Jinks, Edwin	Logan.
Kearl, Christopher James	Laketown.
Kerr, John Andrew	Richmond.
Kidman, Frederick James	Mendon.
Labrum, William Arthur	Meadow.
Larsen, Lorenzo	Georgetown, Idaho.
Larson, William	Newton.
Mason, Frank Marion	Willard.
Nelsen, Francis Eugene	Greenville.
Nicholes, Josiah Ernest	Coyoto.
Passey, Edward John	Paris, Idaho.
Peck, Edward Burton	Roswell, Idaho.
Redford, Abraham Knight	Logan.
Rolapp, Henry Karl	Ogden.
Ross, Ray Arthur	Ogden.
Scarborough, Joseph	Franklin, Idaho.
Shurtliff, Jesse	Harrisville.
Squires, Leo Maiben	Logan.
Stoddard, Delbert Chase	Georgetown, Idaho.
Swenson, Daniel Arthur	Pleasant Grove.
Tegtmeyer, Christian	Logan.
Toombs, Roy Chandler	Carlin, Nevada.
Webb, Melvin Jesse	Monroe.
West, Frank Leroy	Morgan.
Whipple, Charles	St. George.
Wilde, Benjamin Charles	Coalville.
Wilde, Joseph	Coalville.
Willis, Arthur Willis	Kanarra

Winter Course, Second Year.

Blanchard, Henry	Logan.
Davis, Earl	Wallsburg.
Hughes, Robert	Samaria, Idaho.
Miller, Alma	Providence.

Winter Course, First Year.

Allred, Emanuel A.	Fairview,
Andrews, Jobin Lynon	Logan.
Andrews, John Montgomery	Logan.
Andrews, Junius James	Logan.
Bissegger, August John	Providence.
Blanchard, Asarl	Logan.
Chugg, Ezra Albert	Providence.
Crookston, Oscar	Greenville.
Erickson, Joseph Alma	Willard
Glenn, Israel Lund	Wellsville.
Gray, Bert	
Hugi, William Christian	Logan.
Johnson, Joseph Erastus	Moroni.
Larsen, Peter	Greenville.
Maughan, George	Greenville.
McDermaid, William	Diamondville, Wyoming.
McNeal, Robert	Logan
Nelson, Alex	Logan.
Nelson, Thomas Edward	Logan.
Nyman, Andrew	Greenville.
Peterson, Austin	Logan.
Peterson, Nephi	Logan.
Peterson, Oliver	Logan.
Rees, Philip	Cherry Creek, Idaho.
Robbins, Walter James	Stone, Idaho
Scott, George Washington	Salt Lake City.
Smith, Leroy	Greenville.

ENGINEERING PREPARATORY.

First Year.

Allan, Ernest Maughan	Wellsville.
Archibald, Allen Henry	Wellsville.
Bjerregard, Walter	Ephraim.
Christensen, Peter Victor	Hyrum.
Colby, LeGrande	Mendon.
Davenport, Frank Remington	Hood River, Oregon.
Dunn, Oscar Smith	College.
Eccles, Royal	Ogden.
Finlayson, George Clifford	Logan.
Gillett, Perry	Tooele.
Harris, Francis Meville	Butte, Montana.
Hoggan, Walter John	Manti.
Holdaway, Dean David	Price.
Horton, John Raymond	Ogden.
Howell, Luther Maughan	Wellsville.
Jennings, Frank Kimball	Salt Lake.
Jennings, Joseph Devereaux	Salt Lake.
Johnson, Chester Kearl	Laketown.
Johnson, Harvey Cris	Logan.
Johnson, Heleman	Logan.
Kearns, James Leonard	Park City.
Langton, Seth Alma, Jr	Logan.
Laughney, Clarence Edmund	Ogden.
Lee, Oscar Richard	American Fork.
Lewis, James Leonard	Logan.
Lewis, William	Logan.
McDonald, Richard	Hayden, Idaho.
McNaughton, Lorenzo Ellsworth	Vernal.
Mortensen, Hardy	Levan.
Moses, Jesse Tilton	Smithfield.
Oldham, James Henry	Logan.
Palmer, A. M.	Oxford, Idaho.

Perry, Seth Eugene	Vernal.
Powell, Jonathan Sockwell	Payson.
Schaub, Eugene	Logan.
Thatcher, Edgar	Logan.
Turner, Thomas Henry	Ogden.

PREPARATORY.

Abel, Robert	Lewiston.
Adams, Dennis Elias	Thatcher.
Adams, George Edward	Logan.
Adams, George Winfield	Layton.
Adams, Jabez Samuel	Layton.
Andrews, Michael	Logan.
Beck, Heber	Newton.
Bickmore, Newman David	Paradise.
Blechert, Johanna	Geneva, Idaho.
Bloom, Charles Ernest	Salmon, Idaho.
Bunce, John	Logan.
Byers, Mary	Kemerer, Wyoming.
Caine, Lawrence Ballif	Logan.
Carlos, Oscar	Layton.
Carruthers, Clyde	Market Lake, Idaho.
Clark, Roy W.	Gunnison.
Cohn, Jerome Guy	Oneida, Idaho.
Davis, Thomas Jones	Malad, Idaho.
Edmunds, Lorenzo	Salt Lake City.
Egbert, Reuben Gardner	Logan.
Fjelsted, Martha	Riverside, Idaho.
Fonnesbeck, Leon	Logan.
Gabrielson, Hans Martin	Logan.
Germer, Martin Louis	Bay Horse, Idaho.
Hall, Leroy Williamson	Wellsville.
Hansen, Hyrum Orson	Weston, Idaho.
Hellewell, Jannetta I.	Downey, Idaho.
Hess, Clarence Wilson	Georgetown, Idaho.

Jacques, David	Logan.
Johnson, Christian	Logan.
Johnson, Eugene	Millville.
Kearl, Willis Ellsworth	Laketown.
Kennington, George	Afton, Wyoming.
Kerr, Joseph Marion	Ora, Idaho.
Kidman, Harriet Maria	Petersboro.
Larsen, Orsen	Millville
Larson, August	Millville.
Layton, Benjamin	Layton.
Lowe, Mahias	Franklin, Idaho.
McCulloch, Lorinda	Weston, Idaho.
McNeil, William	Logan.
Marriott, Bertha Delania	Plain City.
Mouritzen, Andrew	Logan.
Nebeker, Eva Magdalene	Logan.
Nebeker, Luella	Laketown.
Nebeker, Mabel	Laketown.
Olofson, Oscar	Logan.
Olson, John Emil	Logan
Parkinson, William Franklin	Baker, Oregon.
Pearce, Flora	Randolph.
Peterson, Charles Joel	Preston, Idaho
Peterson, Rebecca Amelia	Smithfield.
Poulsen, George W	Logan
Poulter, Lee	Logan.
Pullum, Isaac Leroy	Trenton.
Quayle, Jeannette	Dingle, Idaho.
Robb, Thomas William	Paragoonah
Roberts, David Willen	Logan.
Roberts, Frank Arthur	Afton, Wyoming.
Scott, Arthur Leroy	Millville.
Sidwell, Gideon Wilson	Manti.
Simmons, Robert	Layton.
Smith, Alexander	Logan.
Taylor, Clara Ethel	Cokeville, Wyoming.

Thomas, Carrie	Logan.
Thomas, Daniel Francis	Ogden.
Thompson, Terrence	Ogden.
Thomsen, Alvin Winger	Logan.
Toombs, Wallace R.	Carlin, Nevada.
Walsh, William James	Huston, Idaho.
Walton, William Wallace	Auburn.
Woodward, Harry Thomas	Corinne
Wright, George William	Franklin, Idaho.

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